AMERICAN JOURNAL OF ORTHODONTICS

OFFICIAL PUBLICATION OF
THE AMERICAN ASSOCIATION OF ORTHODONTISTS,
ITS COMPONENT SOCIETIES, AND
THE AMERICAN BOARD OF ORTHODONTICS

Editor-in-Chief

H. C. POLLOCK, ST. LOUIS, MO.

Sectional Editors

CHARLES R. BAKER, Evanston, Ill.
HENRY COSSITT, Toledo, Ohio
JOSEPH D. EBY, New York City
WILLIAM E. FLESHER, Oklahoma City, Okla.
HENRY F. HOFFMAN, Denver, Colo.
STEPHEN C. HOPKINS, Washington, D. C.
JAMES D. McCOY, Beverly Hills, Calif.
OREN A. OLIVER, Nashville, Tenn.

Associate Editors

DENTISTRY FOR CHILDREN
WALTER T. McFALL, Asheville, N. C.

ABSTRACTS AND REVIEWS
J. A. SALZMANN, New York City

PUBLISHED BY THE C. V. MOSBY COMPANY, ST. LOUIS 3, U. S. A.

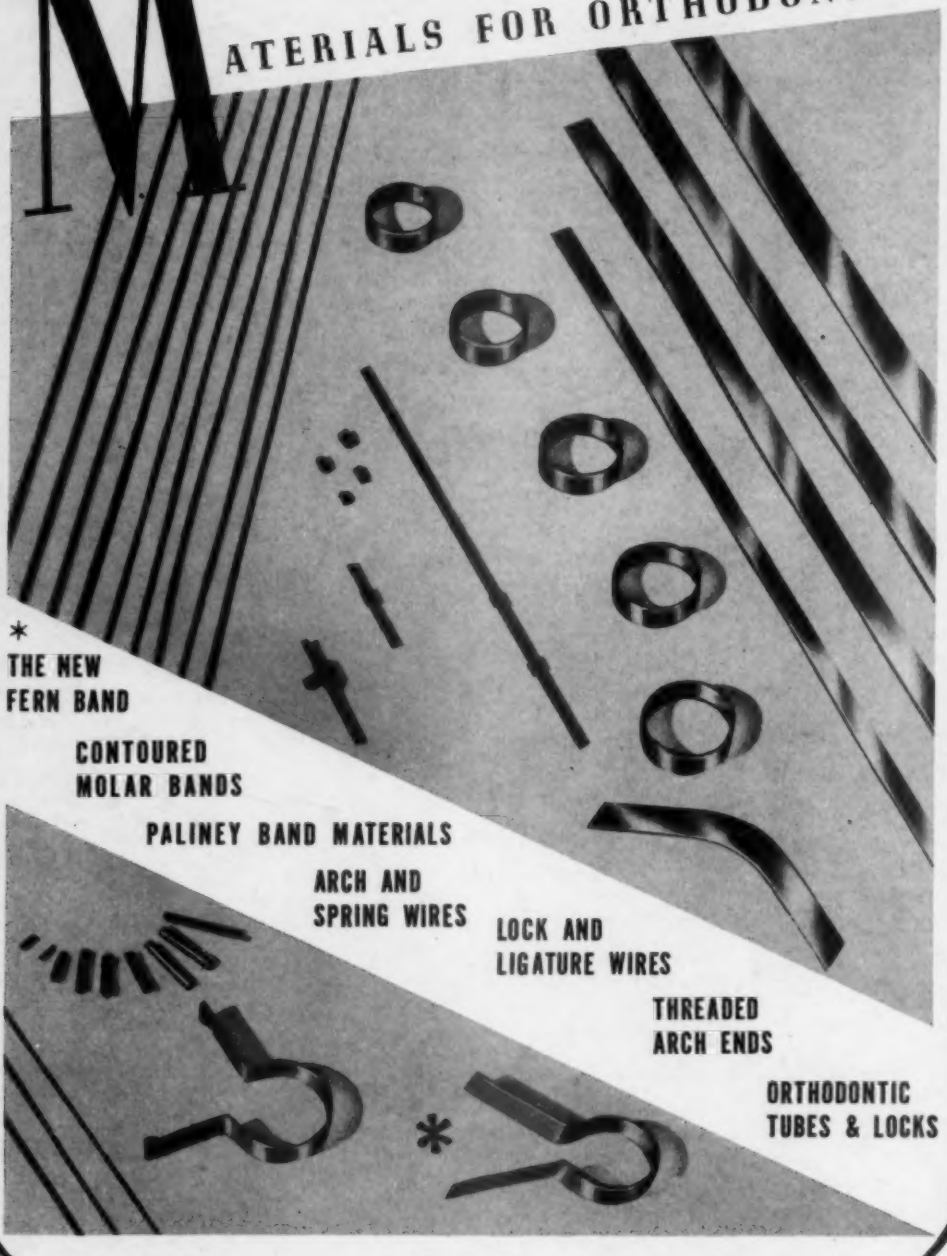
TABLE OF CONTENTS ON PAGE 2

Copyright 1952 by The C. V. Mosby Company

Vol. 38 **APRIL, 1952** **No. 4**

NEY

MATERIALS FOR ORTHODONTIA



* THE NEW FERN BAND

CONTOURED MOLAR BANDS

PALINEY BAND MATERIALS

ARCH AND SPRING WIRES

LOCK AND LIGATURE WIRES

THREADED ARCH ENDS

ORTHODONTIC TUBES & LOCKS

NEY GOLD

Dependable Products . . . Helpful Service

Since 1812

THE J. M. NEY COMPANY • HARTFORD 1, • CONNECTICUT

4NY52

Vol. 38, No. 4, April, 1952. American Journal of Orthodontics is published by The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo. Subscription price: United States, its possessions, Pan-American Countries, $10.00; Canada and Foreign, $11.00. Entered as Second class matter January 14, 1915, at the Post Office at St. Louis, Missouri, under the Act of March 3, 1879. Printed in the U. S. A.

ORALIUM BAND MATERIAL

FAST BECOMING STANDARD FOR ECONOMY BANDS

ORALIUM BAND MATERIAL

JOHNSON ORALIUM LOOP MOLAR BANDS

ORALIUM is the inexpensive band material. We take a large half inch thick bar of the very light weight Oralium casting gold and weld a sheet of pure platinum on both sides of this, then roll it out into all required gauges and widths of strips and ready made bands as illustrated.

The three sheets of metal welded together have extreme toughness and non-tearing qualities with the proper malleability. If you grind through the pure platinum surface you expose only a very good precious metal alloy.

Ten per cent iridium-platinum has always been the recognized standard of band materials but because of its high cost and the scarcity of iridium we are advocating our

PLATINALOY, the 100% gold and platinum metals band material which has all the qualifications of 10% iridium-platinum;

CONTURO, which is a little cheaper but popular with some because of its extreme toughness and the ease with which it can be unsoldered. Sold in strip form only.

We believe it is to our best mutual interests to supply your needs through your local dealers if you care to send us his name with your order.

GUMWOOD BOX

PLATINALOY OR ORALIUM—48 SIZES—NOS. 1 TO 12 EXTREME TAPER. 13 TO 24. SLIGHT TAPER AND 25 TO 48 STRAIGHT.

JOHNSON ORALIUM LOOP BANDS—4 SIZES ALL YOU NEED. ORDERS FOR 100 IN CLOTH COVERED BOX.

BAKER & CO., INC.

113 Astor St., Newark 5, N. J.

30 CHURCH ST., NEW YORK 7 | 55 E. WASHINGTON ST. CHICAGO 2 | 760 MARKET ST. SAN FRANCISCO 2

CONTENTS FOR APRIL, 1952

American Journal of Orthodontics

Original Articles

President's Address. Central Section of the American Association of Orthodontists. P. M. Dunn, D.D.S., Minneapolis, Minn. ---- 233

The Mechanical Therapy Employed in Following the Tweed Philosophy in Orthodontics. B. L. Herzberg, D.D.S., M.D.S., Chicago, Ill. ---- 237

Organization Responsibilities of Orthodontists. Bernard G. deVries, D.D.S., Minneapolis, Minn. ---- 264

A Typical View of European Orthodontics. J. A. C. Duyzings, Utrecht, The Netherlands ---- 272

Cleft Palate. Report of a Case. Herbert D. Jaynes, D.D.S., Atlanta, Ga. ---- 285

The Victor Club. Arthur J. Burks, Paradise, Lancaster County, Pa. ---- 289

Thumb-Sucking and Its Relationship to Malocclusion in Children. W. H. Littlefield, B.D.S. (Durham), H.D.D. (Edinburgh), Newcastle upon Tyne, England ---- 293

In Memoriam

Kirman E. Taylor ---- 301

Orthodontic Abstracts and Reviews

Orthodontic Abstracts and Reviews ---- 302

News and Notes

News and Notes ---- 305

Officers of Orthodontic Societies

Officers of Orthodontic Societies ---- 314

PSYCHOSOMATICS AND SUGGESTION THERAPY IN DENTISTRY

$3.75

By DR. J. STOLZENBERG

Author and Lecturer on Psychosomatics and Hypnosis in Dentistry

"One of the best on the subject yet to appear" —Journal of Dental Medicine, July, 1951

"This book should be in every Dentist's library; the only book of its kind."—The Psychiatric Quarterly, July, 1951

"Dentists and Dental Hygienists who have little knowledge of this subject will find this book of incalculable interest and value."—N. Y. State Dental Journal.

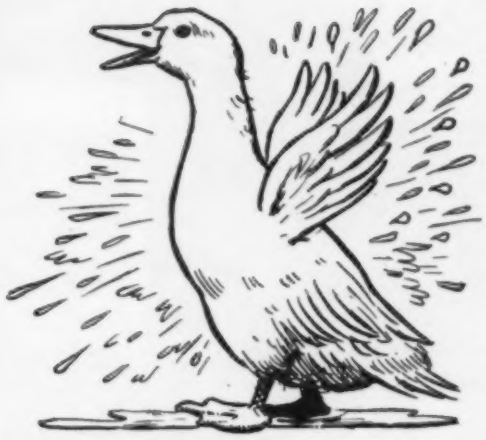
A Partial List of the Contents:

- Psychological Management of Patients
- How to Approach the Apprehensive Patient
- How to Overcome Bruxism and Teeth-Clenching and other Psychosomatic Manifestations During Orthodontic Treatment
- How to Break Oral Habits Contributing to Malocclusion
- Conditioning of Patients to Overcome Gagging when Taking Impressions, Taking X-Rays and Wearing Removable Appliances
- How to Employ Hypnosis in Dentistry

Send Check With Your Order Today!

LEO L. BRUDER

1 DeKalb Avenue **Brooklyn 1, N.Y.**



NATURE DID IT FOR THE DUCK

Yes, old Mother N. saw to it that our web-footed friends don't get waterlogged. She provided an ingredient which makes their feathers impervious to water—which proves that Nature is kinder to ducks than to dental cement manufacturers. To make S-C Cement impervious not only to water but to all kinds of mouth fluids, we had to spend a lot of time and effort in research and experimentation—but we came up with a cement that no mouth fluid can dissolve.

A FREE SAMPLE will show you what we mean. To get yours, just mail the coupon in your professional envelope.

S-C CEMENT

A FREE BOOKLET that gives "The Low-Down on a High Quality Dental Cement" is available. If you would like a copy of this informative publication, check the attached coupon.

OJ

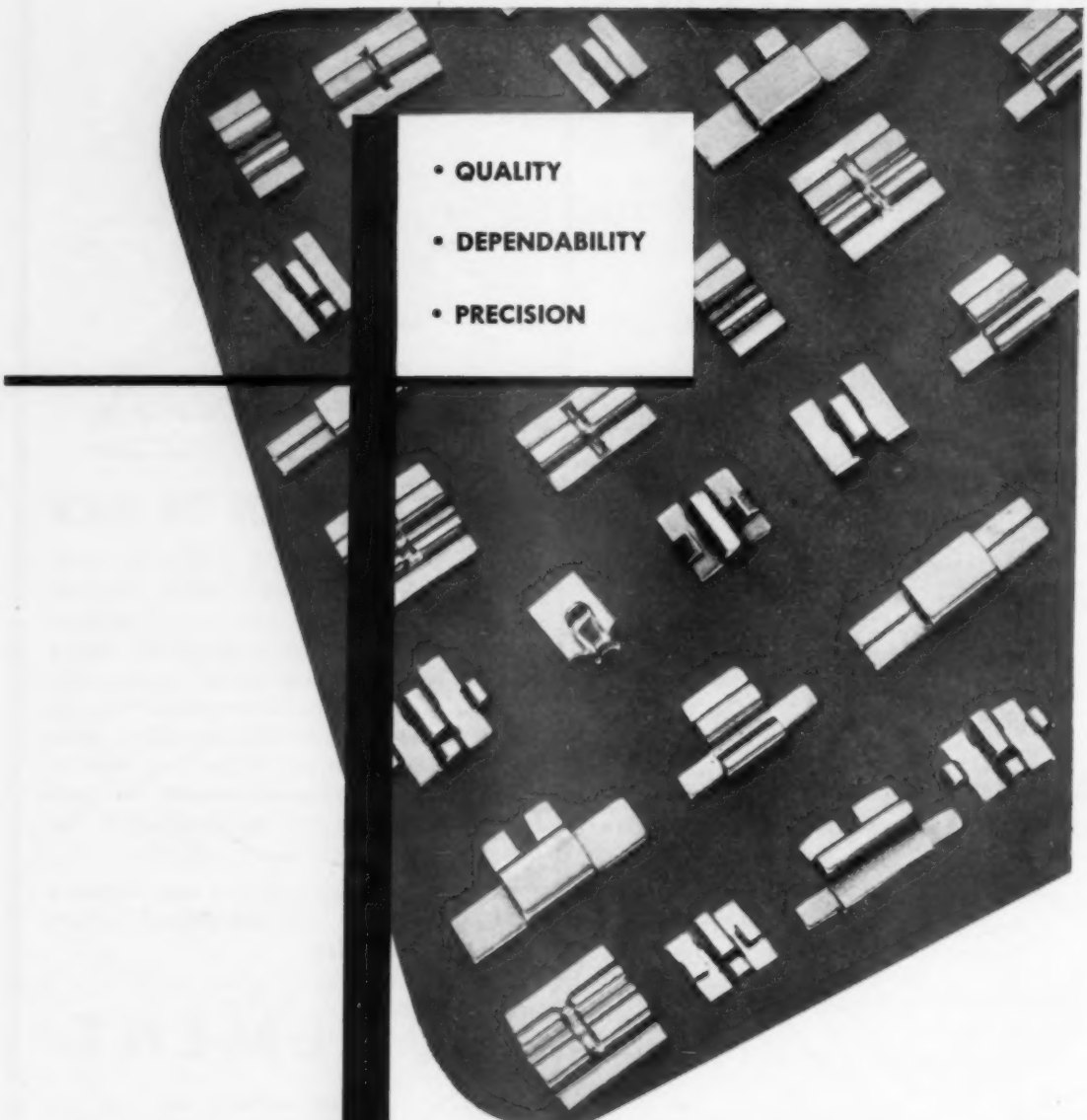
STRATFORD-COOKSON COMPANY
4058 Haverford Avenue, Phila. 4, Pa.
Please send me the following, without any charge or obligation:

☐ S-C CEMENT Sample ☐ CEMENT Booklet

Dr. _____

Address _____

_____



ATTACHMENTS

Universal
Edgewise
Twin-Arch
McCoy
Molar
Lingual
Anterior

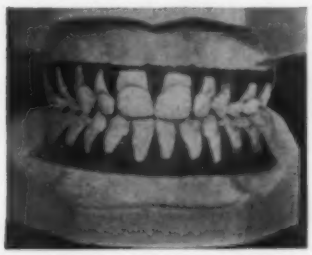
All UNITEK precision appliances are produced under the most exacting control and inspection methods... your assurance of undeviating quality and consistent dependability. Appliance consistency conserves valuable minutes in chair time... makes the orthodontist's work easier and makes it easier on the patient, too. Specify UNITEK... a reliable source for all your orthodontic material requirements.

Unitek
CORPORATION

275 North Halstead Avenue · Pasadena 8, California

Acrycett
ORTHODONTIC POSITIONERS
AN AID TO DENTO-FACIAL-ORTHOPEDICS

I. After bands are removed.



II. "set-up" by Acrycett from which appliance is constructed.

III. Appliance in position.

An Approved Appliance to Assure Your Cases an Esthetic, Functional and Successful Completion

Acrycett Positioners are constructed of a flexible, non-toxic plastic especially compounded for Acrycett. Labial and lingual arches and rest position are built into every Positioner in accordance with best orthodontic requirements. Also effectively eliminates mouth breathing and undesirable tongue-thrust habits. All cases are individually supervised by Mr. Louis Cettel, the originator of the Acrycett flexible plastic-type Positioner with inner structure. Prompt service with coast-to-coast air mail delivery.

Acrycett **Additional information available at your request**
634 S. Western Ave., Los Angeles 5, Calif. Ph: DUnkirk 8-3914

Superior ROUND TUBING
Stays brighter . . . Wears better . . . Works easier

Superior Inconel* Round Tubes have distinct advantages in labial wire appliance construction.

CORROSION RESISTANCE: They stay bright and tarnish-free in the presence of oral acids and saliva.

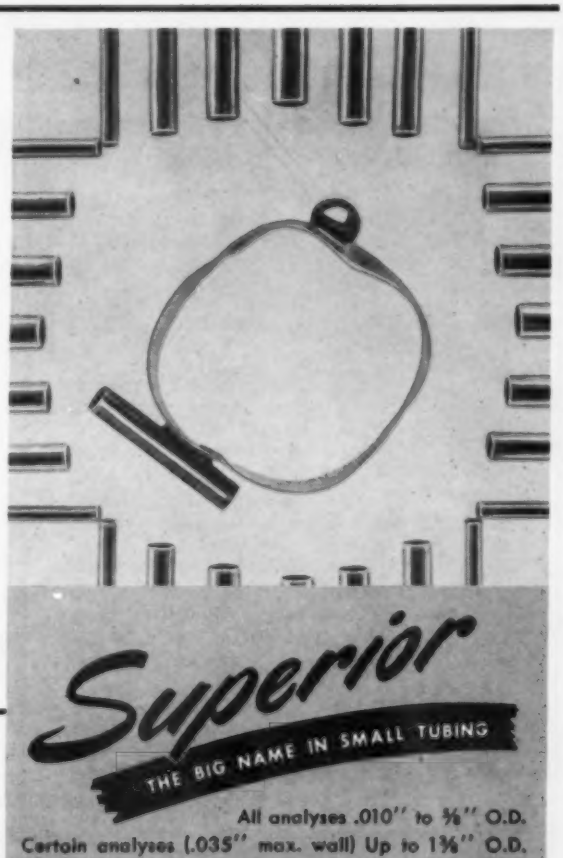
WEAR RESISTANCE: Tubes made from hard, tough Inconel* withstand wire wear during fitting and after many appliance adjustments. Buccal tube distortion is greatly reduced in severe mal-occlusions.

WORKABILITY: Inconel* tubes are readily soldered to precious metals or stainless steel bands using a low fusing silver solder in water soluble flux.

STANDARD SIZE: Available in 1 to 3 foot random lengths or cut pieces to your specification, will receive .045", .040", .036" wire and end tubing to take two .011" wires for twin arches.

For proof in your own office, send for samples today. In addition, Superior Inconel* tubes have a desirable price advantage over precious metals. Write Superior Tube Company, 2026 Germantown Avenue, Norristown, Pennsylvania.

*T.M. Reg. International Nickel Co.



CALVIN S. CASE

Dental Orthopedia and Prosthetic Correction of Cleft Palate

2nd Edition—$12.00

BRASH

Growth of the Jaws, Normal and Abnormal, in Health and Disease

$3.50

(Limited number of copies available)

ALL ORDERS PAYABLE IN ADVANCE

Large number of back issues of Orthodontic Journals on hand at all times.

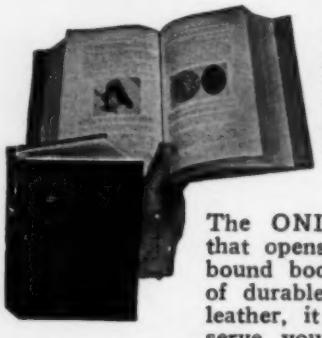
Send me your wants in out-of-print dentistry.

LEO L. BRUDER

1 De Kalb Avenue Brooklyn 1, N.Y.

SPECIALIZING IN OUT-OF-PRINT DENTISTRY

A Handsome Permanent Binder for American Journal of Orthodontics



NOTE PRICES
Single Binder $3.25 each.
Two or more of same Journal, $2.75 each.

The ONLY binder that opens flat as a bound book! Made of durable imitation leather, it will preserve your journals permanently. Each cover holds 12 issues, one volume. Do your own binding at home in a few minutes. Instructions easy to follow.

Mail coupon for full information and binder on 10-day free trial.

——— MAIL COUPON TODAY———

SUCKERT LOOSE LEAF COVER CO.
234 W. Larned St., Detroit, Michigan

Mail postpaid ------ binders for "The American Journal of Orthodontics" for year ------. Will remit in 10 days or return bindings collect.

Name ----------

Address ----------

Postgraduate Course in Orthodontics

Temple University announces a two-weeks course in Orthodontics beginning January 25, 1953, under the direction of Dr. Robert H. W. Strang.

This course is given to practicing Orthodontists only. The cost is $150.00, exclusive of instruments and books.

Applications can be made to:

DR. LOUIS HERMAN

Director of Postgraduate Studies
Temple University School of Dentistry

3223 North Broad Street
Philadelphia 40, Pennsylvania

FOR SALE—Orthodontia library, complete bound set American Journal of Orthodontics, other rare books and German publications. Dr. E. H. Golden, 6204 Delmar, St. Louis 5, Missouri.

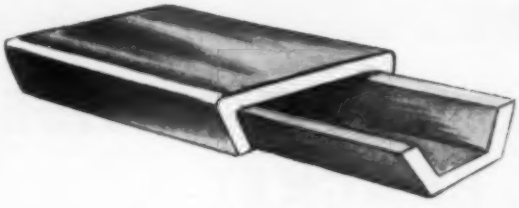
Orthodontic practice for sale in Ohio. An excellent opportunity. Must sell because of ill health. Available soon. Address Box GB, c/o American Journal of Orthodontics, 3207 Washington Blvd., St. Louis 3, Missouri.

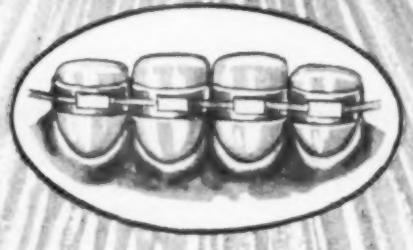
TRU-CHROME FOR STRENGTH AND PRECISION

THE

TRU·CHROME

Twin-Arch BRACKET





Positively precision made, the Tru-Chrome Twin Arch Bracket rounds out the Tru-Chrome line of supplies for every individual operator's preference in Twin Arch mechanisms.

Tru-Chrome cannot corrode. It cannot harm human tissue. Although superior to all other orthodontic metals, it is the least expensive of any reliable material.

This Bracket is supplied pre-welded to Tru-Chrome .100 x .004 Band Material.

PLEASE ORDER BY NUMBER

No. 222—Brackets on Band Material .....$6.00 doz.
No. 223—Caps ..... 3.60 doz.
No. 224—Complete Units Brackets and Caps..... 9.60 doz.

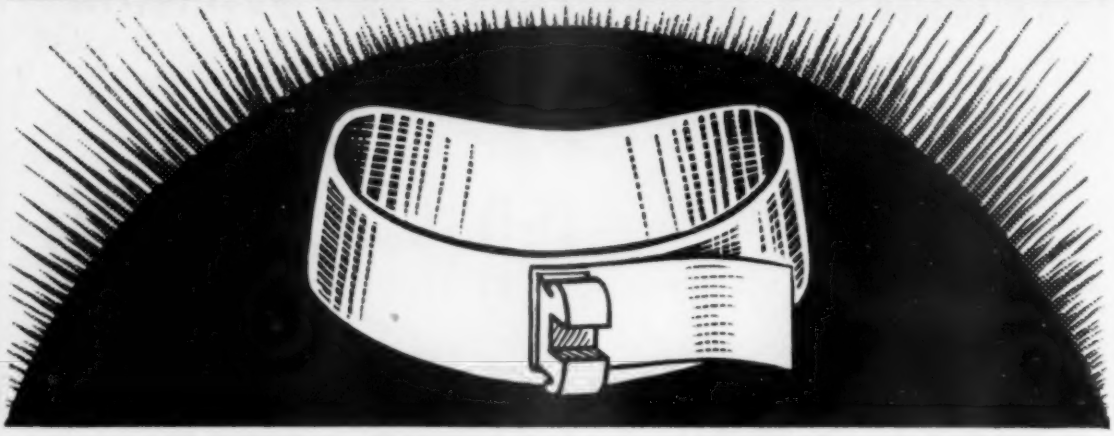
ROCKY MOUNTAIN METAL PRODUCTS CO.

1450 GALAPAGO ST. P.O. BOX 1887 DENVER 1, COLO.

East Coast Distributor: Gilbert W. Thrombley, 220 W. 42d St., New York 18, N.Y.
West Coast Distributor: Karl A. Kreis, 443 Sutter St., San Francisco 8, California
Export Department: P.O. Box 1051, Denver 1, Colo.

HIGHEST QUALITY AT THE LOWEST PRICE

TRU•CHROME: MAXIMUM STRENGTH



This Is The Tru•Chrome EDGEWISE ROTATION BRACKET

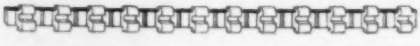
A Very Useful Supplement to a Very Popular Group of Materials

The new Edgewise Rotation Bracket is manufactured exactly like Rocky Mountain's Edgewise Anterior Bracket except one flange is longer so that it may be engaged as a rotation spring. These brackets are furnished in strips of twelve, flanged for spotwelding, and scored for easy detachment.

The extended welding flange serves as a spring resting against the arch wire. It can be used for mild or extreme rotations. The Rotation Bracket works quite rapidly and the tooth can be rotated at the same time it is moved labially from linguoversion.

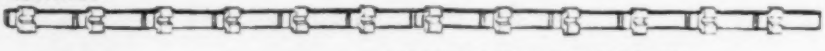
MOLAR

ANTERIOR



Anterior Brackets	$2.65 doz.
Posterior Brackets	3.15 doz.
Rotation Brackets	3.15 doz.

ROTATION



STRONG!

Tru-Chrome Edgewise Materials with Spot-welding.

CATALOG FREE ON REQUEST

ROCKY MOUNTAIN METAL PRODUCTS CO.

1450 Galapago — P. O. Box 1887, Denver 1, Colo.

East Coast Distributor: Gilbert W. Thrombley, 220 W. 42d, New York 18, N. Y.
West Coast Distributor: Karl A. Kreis, 443 Sutter Street, San Francisco 8, Calif.
Export Department: P. O. Box 1051, Denver 1, Colo.

TRU•CHROME: NON-CORROSIVE; TISSUE TOLERABLE

American Journal
of
ORTHODONTICS
(All rights reserved)

VOL. 38 APRIL, 1952 NO. 4

Original Articles

PRESIDENT'S ADDRESS

CENTRAL SECTION OF THE AMERICAN ASSOCIATION OF ORTHODONTISTS

P. M. DUNN, D.D.S., MINNEAPOLIS, MINN.

ON BEHALF of the officers of the Central Section of the American Association of Orthodontists, I want to welcome the members and guests to our annual meeting here in St. Paul. We sincerely hope you will all enjoy yourselves and have a profitable session. Every effort has been made to assure that result. Our local arrangements committee, of which Joe Baker is chairman, and the program committee, headed by Thomas D. Speidel, deserve special credit for their work in planning the scientific meetings and the entertainment features. It seems fitting that our group should meet here at this time, when our climate—frequently unpredictable—is most likely to be pleasant, and when the beauties of a northern autumn are at their best. Moreover, some of the outstanding men of orthodontics live here or have lived at some time or another in the Twin Cities. Dr. Angle himself once practiced in Minneapolis. Several men in our regional group have been presidents and secretaries of the national organization. I refer particularly to Dr. Max Ernst, of St. Paul, former secretary and past-president. Dr. deVries, who is now president of the American Association of Orthodontists, and who is on our program today, has his practice in Minneapolis.

Five years ago we held our first scientific meeting in Minneapolis, and one has been held each year since that time. Our members have cooperated in making each of these meetings a success. During our five years of existence our membership has increased substantially and we have good reason to feel that we shall continue to grow and develop.

Our secretary, Dr. Earl Shepard, has done a magnificent job in carrying on the affairs of the section. He has carried a heavy responsibility, and I think the time has come when we must give our secretary and our other officers more help than we have in the past. Because our society is expanding,

This article was presented at the meeting of the Central Section of the American Association of Orthodontists, St. Paul, Minn., Oct. 1, 1951.

each one of us must be ready to shoulder additional tasks. And because our membership is growing, it should be possible to divide the work so that no one will be too heavily burdened.

I hope that more and more of the younger orthodontists will join our section each year and will soon be ready to take over some of the responsibilities of running it. Membership in a group like this one of ours can give a young man the benefits of associating with many of the leaders in orthodontics. It can broaden his perspective through the educational opportunities that it offers. Most important of all, membership in this society offers the young orthodontist an additional field of service—to orthodontics, to the dental profession as a whole, and to the public. We look toward our younger men for leadership in the future, and we want to see them preparing themselves right now for that leadership. Some of us older members feel that we are growing old fast, and we need the help that the younger men can give us. In any organization, the best work is done when a proper balance is maintained between the enthusiasm of the younger members and the experience of the older ones. When the older element is lacking, the result is often likely to be an impetuous pursuit of the new and the untried, which may end in disaster. When the younger generation is left out, the group is too likely to get bogged down in a time-worn rut. We do not want either of these things to happen to us.

As a representative of the older group, and also as your retiring president, I am charged with the task of suggesting to you some ways in which we may all work together in the coming year and in the more distant future to improve and strengthen our organization. During the past year, I have given a great deal of thought to these matters. It seems to me that each of us could get much more out of this organization by putting more individual effort into it. Perhaps when some of you were children, you belonged to one of those little secret clubs that flourish among the small fry of a certain age. Usually the membership is very limited, and everybody holds an office of some kind. Maybe those little clubs do not last very long or accomplish anything very world-shaking, but the kids have the right idea in seeing that everybody in the organization has a job to do. The same thing is true in education today. Youngsters are not expected to sit back and merely listen to what the teacher has to say. They serve on committees and thus they work along with the teacher in acquiring an education that really means something to them. Certainly the teacher, with her special preparation and training, must continue to guide and counsel the children. In like manner the officers of an organization should be ready to guide and counsel the members. They can do the best job in that capacity if they avail themselves of every possible opportunity to get together with the members, find out what the members are thinking and what they hope and expect to get from the organization. The members will profit most if they willingly accept and carry out responsibilities, working along with the officers to improve our profession and increase our ability to serve our patients.

In line with this desire that we all have to improve our professional standing and increase our ability to serve, I should like to recommend to you the

American Board of Orthodontics. Admission to it will enhance your standing and the study that the Board requires can be a great help toward improving yourselves as orthodontists.

As your president, I have often felt the need for conferring with the other officers, and I believe such conferences could be very helpful. I suggest, therefore, that the officers get together during the year to discuss anything that might be for the welfare of the organization. Such interim sessions would not only serve to hold the organization together more firmly, but would also bring up many matters of interest that could be enlarged upon at our annual meetings.

These annual meetings should be seasons of self-examination and evaluation. They should be times when we look back over what we have accomplished and forward to what we should do and what we can do in the coming year toward reaching our long-term goals. As I see it, we each have certain well-defined responsibilities. It is the responsibility of the officers to help strengthen the organization and to improve the scientific meetings. It is the responsibility of the members to do everything possible to assist the officers and to develop themselves to become good essayists and clinicians. In the eight states and three Canadian provinces included in our area, I am sure we have a great many potential workers who have much to contribute to our organization. We should have some way of finding this talent. I therefore propose that an advisory committee be appointed, consisting of one member from each state and province. This committee would serve to discover and develop the talent that may become the new blood to nourish our organization and give it fresh energy. The committee would correlate all the available information on clinicians and essayists, and would present recommendations to the society for using them most effectively. Membership in a committee of this kind should run for five years, thus keeping men on it long enough to profit by experience.

We should see that the members of all committees have copies of our constitution and bylaws and copies of resolutions pertaining to the activities of the organization, so that they will know what rules they must abide by. We should also, I think, adopt resolutions defining the policies to be observed by the various committees, especially regarding such things as honorariums and expenses and other matters that concern the program committee. I should like to request you to approve this principle of defining policies. What those policies will be will depend upon the wishes of the organization.

The last suggestion I should like to make at this time concerns the development of a system for letting all our members know what we do at annual meetings and what our committees do during the year. It is not possible for every member to attend the annual meeting every year, and for that reason I feel we should arrange to print a summary of the proceedings of these meetings and send it to our entire membership. I am sure those of us who do attend would find such material helpful in refreshing our memories, and for those who cannot be with us at the meeting, the report would be invaluable. These reports of the annual meeting, and also reports of committee actions,

would be of special value to newer members. We cannot expect them to develop an interest in what we are trying to do unless they are properly informed.

Let me briefly clarify my suggestion regarding the desirability of reports from our committees. I should like to see each committee keep and distribute a record of its discussions and recommendations. These reports need not be long or involved—simply summaries of what the committee does. Some of you may feel that keeping records is a nuisance. But I beg to remind you that our whole civilization is built on records—mainly written records. Without them we should have no history, no philosophy, no religion, no political traditions. Records constitute an endless chain of history. They make it possible for the new officers and members of an organization to find out, in a very short time, what the organization has accomplished in the past and what its aims are for the future. Without records, there is always the danger that much valuable effort will be wasted and much work done needlessly over and over again. These committee records that I suggest would be a great help to succeeding committees and would increase the efficiency of our whole organization.

In this connection, may I call your attention to the annual report of the Publication and Editorial Board for 1950, which you will find in the July, 1951, issue of your AMERICAN JOURNAL OF ORTHODONTICS, on page 542. Near the conclusion of this report you will find some practical suggestions regarding the preparation of manuscripts for publication.

Before I relinquish the office of president of the Central Section, I should like to say how much it has meant to me to serve our organization during this year, and how deeply I have been impressed with the efforts of the officers and members to establish and maintain the highest possible standards in our profession. I feel quite sure that this organization will continue to develop and expand, and that it will also continue to follow the fine traditions that have been its guiding stars during these five years of study and service.

1246 MEDICAL ARTS BLDG.

THE MECHANICAL THERAPY EMPLOYED IN FOLLOWING THE TWEED PHILOSOPHY IN ORTHODONTICS

B. L. Herzberg, D.D.S., M.D.S., Chicago, Ill.

TO BEGIN an article such as this, on orthodontic therapy without a consideration of the fundamental rationale back of the treatment would be somewhat like constructing a building without a foundation. Thus, even though much has been said and written concerning the Tweed philosophy, and at the risk of being repetitious, we must call attention to some salient theories, or truths, or points, so that certain mechanical procedures may be explained. Then, too, with an understanding of our goal (and this we shall call the normal, or the closest approach to normal obtainable) we may plan our therapy as a builder might plan his work and follow through, step by step, in a systematic and orderly fashion. Tweed has said, "If we succeed in developing the proper concept of the *normal* in our minds, we will not worry, because with it (the concept) all of us can solve our own mechanics of treatment."[1] Consider now this quotation and bear well in mind that I do not hold that the mechanical therapy here outlined is the only, or even the best, means of attaining the desired end product, but is merely the orthodontic procedures used by me and many others and seems, for me, to obtain the best results.

A most important concept is that of the position of the lower incisors as related to the mandibular base. Tweed pointed out that in his concept of normal, there is a normal range of variability of 10 degrees in the position of the lower incisors to base, and he called this plus to minus 5 to basal bone. We are familiar with the minus 5 as being lingually inclined to upright, the zero as being upright to the base, and plus 5 as being labially inclined. The following photographs show well-balanced faces as described by Tweed[2] as having minus 5, zero, and plus 5 positions of the lower incisors to base, represented by Figs. 1, *A*, 1, *B*, and 1, *C* in that order.

Margolis[3] in his research on the axial inclination of the mandibular incisors, working with oriented lateral head x-rays, found that the lower incisors were relatively upright to a line drawn along the inferior border of the mandible, and the subsequent work of other investigators tended to confirm these findings. Fig. 2 illustrates a cephalometric x-ray showing Frankfort-mandibular plane angle and incisal mandibular plane angle.

Another important factor in the philosophy is that of the Frankfort-mandibular plane angle of Tweed.[4] He described this angle as being formed by the intersection of the Frankfort-horizontal plane and the plane formed by the lower border of the mandible as measured on the left side of the face. This angle may be measured on the oriented lateral head x-rays or by means of the

This article was presented at the meeting of the Central Section of the American Association of Orthodontists, Cedar Rapids, Iowa, Nov. 27, 1950.

Frankfort-mandibular angulator as devised by me[5] and improved upon by Savitz,[6] who added the protractor. Fig. 3 shows the Frankfort-mandibular angulator in use.

Speaking of the significance and utility of the Frankfort-mandibular plane angle, Tweed stated that it is very important in orthodontic diagnosis, classification, treatment planning, and prognosis. He classified faces on the basis of the size of the Frankfort-mandibular plane angle and stated that, if this angle is between 20 degrees and 30 degrees, the growth vector has been downward and forward to a degree that is normal. Occasionally these patients will have normal occlusion but most frequently the bony growth pattern will deviate slightly from normal, although the malocclusion may, at times, be quite severe. In the adjustment of these malocclusions, it will be possible to relate the lower incisors to base so that those patients close to the 20 degree Frankfort-mandibular plane angle might exhibit an incisor-mandibular plane angle of minus 5 degrees or 85 degrees, while those with a Frankfort-mandibular plane angle of 25 degrees would exhibit an incisor-mandibular plane angle of zero or 90 degrees and those patients with a Frankfort-mandibular plane angle of 30 degrees would approach an incisor-mandibular plane angle of plus 5 degrees or 95 degrees. Tweed opines that about 60 per cent of all malocclusions fall in the 20 degrees to 30 degrees group and that more than half of these cases will require a reduction of tooth substance, if the end results of treatment are to approach normal proportions.

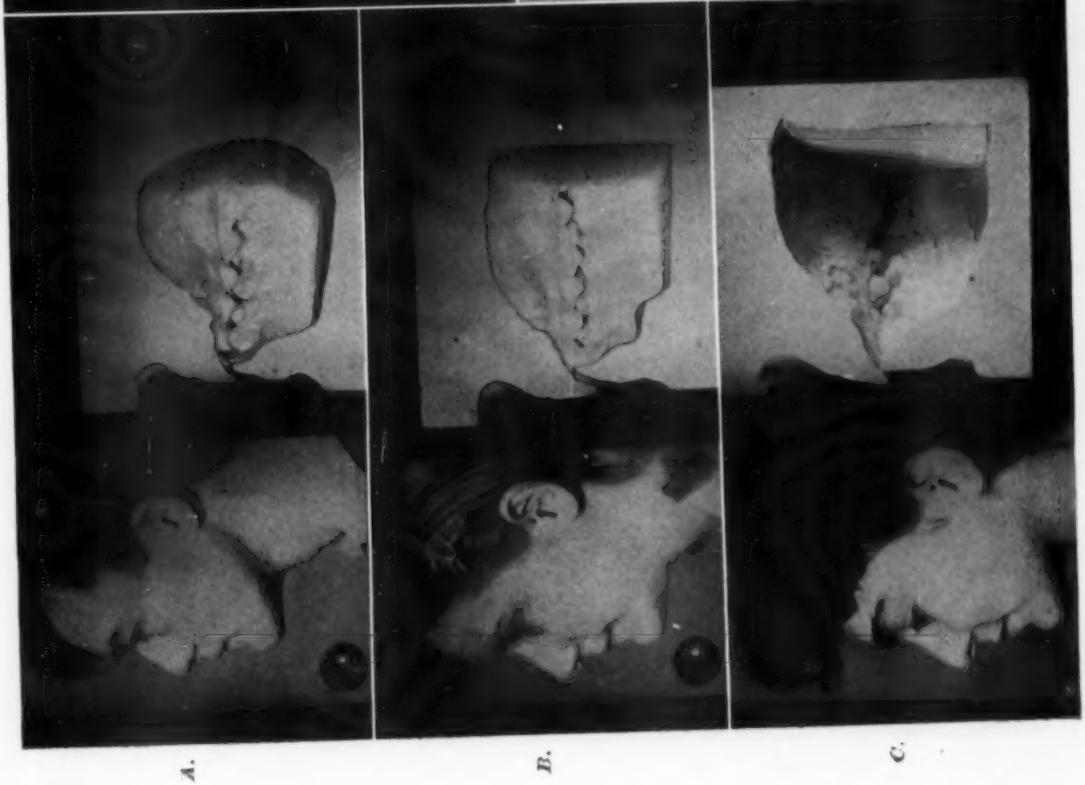
When the Frankfort-mandibular plane angle is between 30 degrees and 35 degrees, the growth vector is not so favorable; but the prognosis is good in those cases close to the 30 degree Frankfort-mandibular plane angle and only fair in those cases close to the 35 degree Frankfort-mandibular plane angle. The closer the approach is to 35 degrees, the more the lower incisors must be tipped lingually in treatment so that, at a 35 degree Frankfort-mandibular plane angle, Tweed suggests an incisor-mandibular plane angle of minus 10 degrees or 80 degrees. To obtain such an angle, the technical difficulties of treatment begin to mount and prognosis is only fair. So, as the Frankfort-mandibular plane angles above 35 degrees, the plus 5 degree to minus 5 de- is poor, and favorable facial changes are not usually obtained except in some large-bodied mandibles. Practically all cases from 30 degrees to 35 degrees are those in which tooth units must be removed in treatment. In Frankfort-mandibular plane angles above 35 degrees, the plus 5 degree to minus 5 degree formula does not apply and, in Frankfort-mandibular plane angles above 40 degrees, prognosis is nil and removal of tooth units may well complicate treatment and detract from facial esthetics. Figs. 4 and 5 illustrate cases of various Frankfort-mandibular plane angles. Fig. 4 is 25 degrees and favorable and Fig. 5 is 47 degrees and unfavorable.

Tweed said that if the lower incisor teeth cannot be uprighted within the plus 5 degrees to minus 5 degrees to the lower borders of the mandible, then teeth must be removed in orthodontic treatment to attain (1) optimum facial esthetics, (2) stability of denture, (3) health of the denture, and (4) efficiency of the denture.

Fig. 2.

Fig. 3.

Fig. 1.



A. B. C.

The general objective in our work is to establish conditions, in our patients, simulating as closely as possible those of the nonorthodontic *normals*. We must, therefore, wherever possible, maintain well-positioned mandibular incisors and reposition over base those that are labially inclined, generally without expansion except in cross-bites or mechanically locked cases.

Fig. 4.

Fig. 5.

Figs. 6 to 13 are of patients treated both with and without extractions with every effort made toward either uprighting, or keeping in a relatively upright position, the lower incisors to base without appreciable expansion; they are intended to show the results of such treatment as a justification of the therapy employed.

Fig. 6 shows photographs on the left, before treatment, and on the right, after treatment, of a Class I case with a Frankfort-mandibular plane angle of

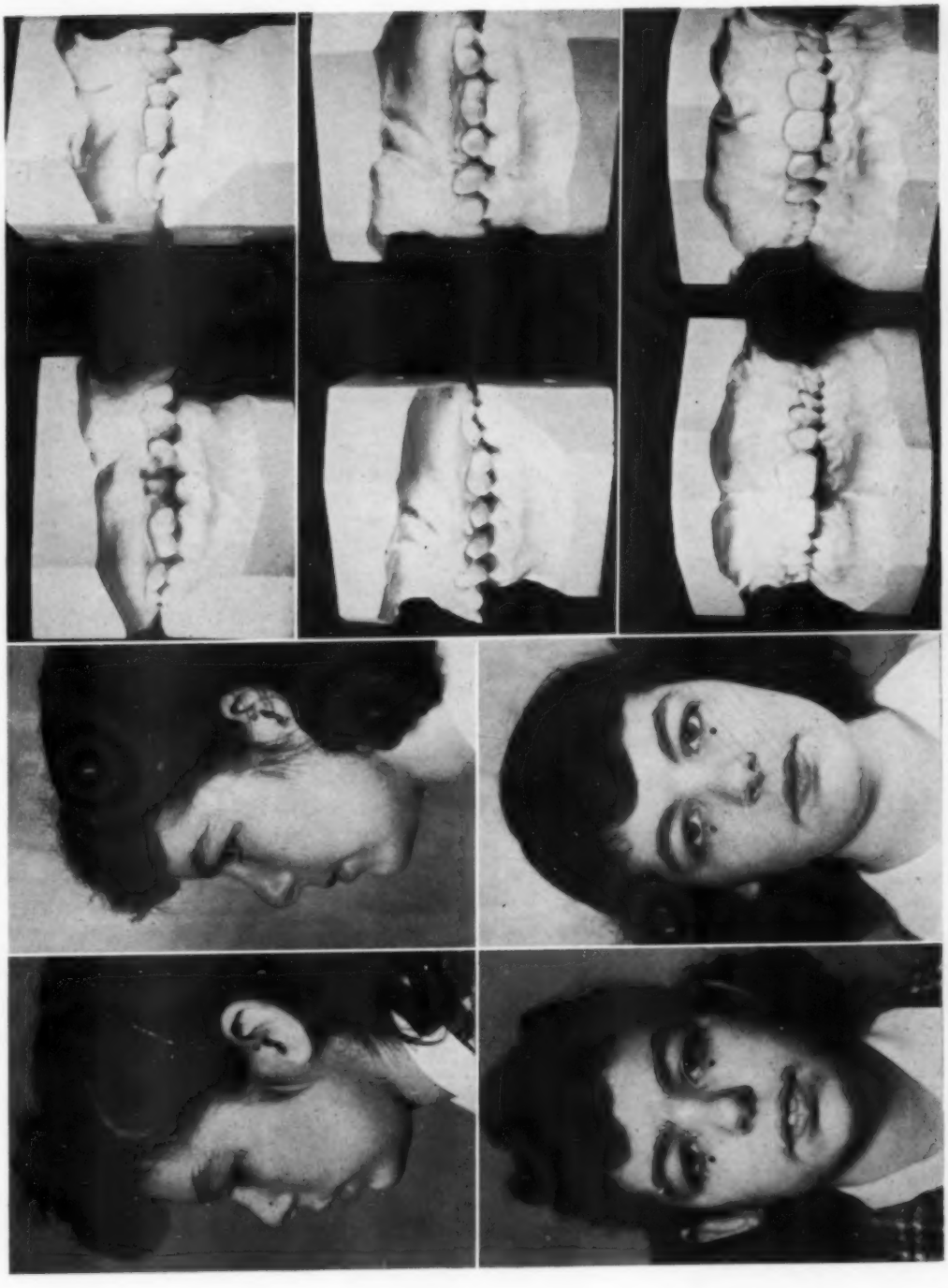


Fig. 6.

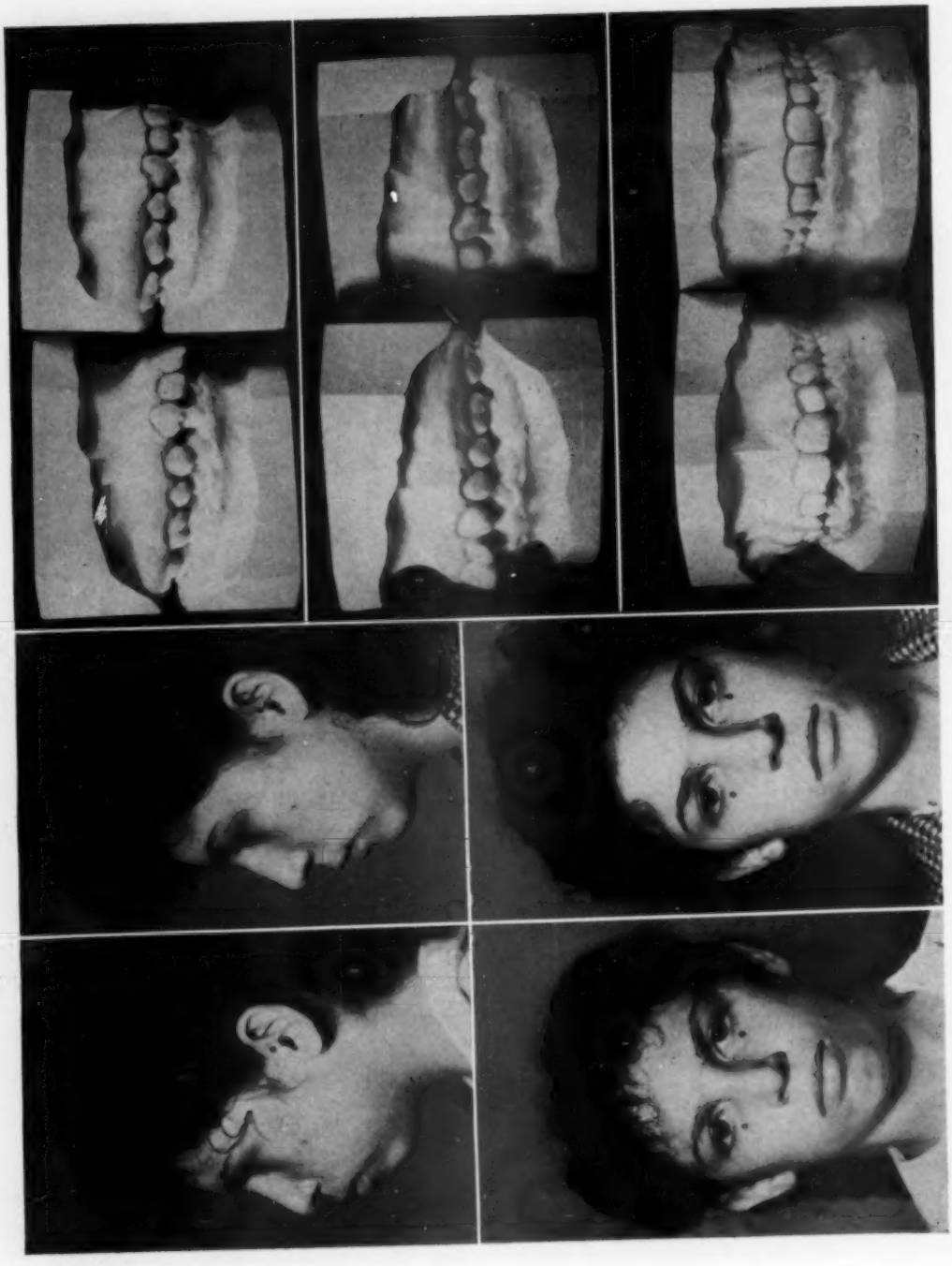


Fig. 7.

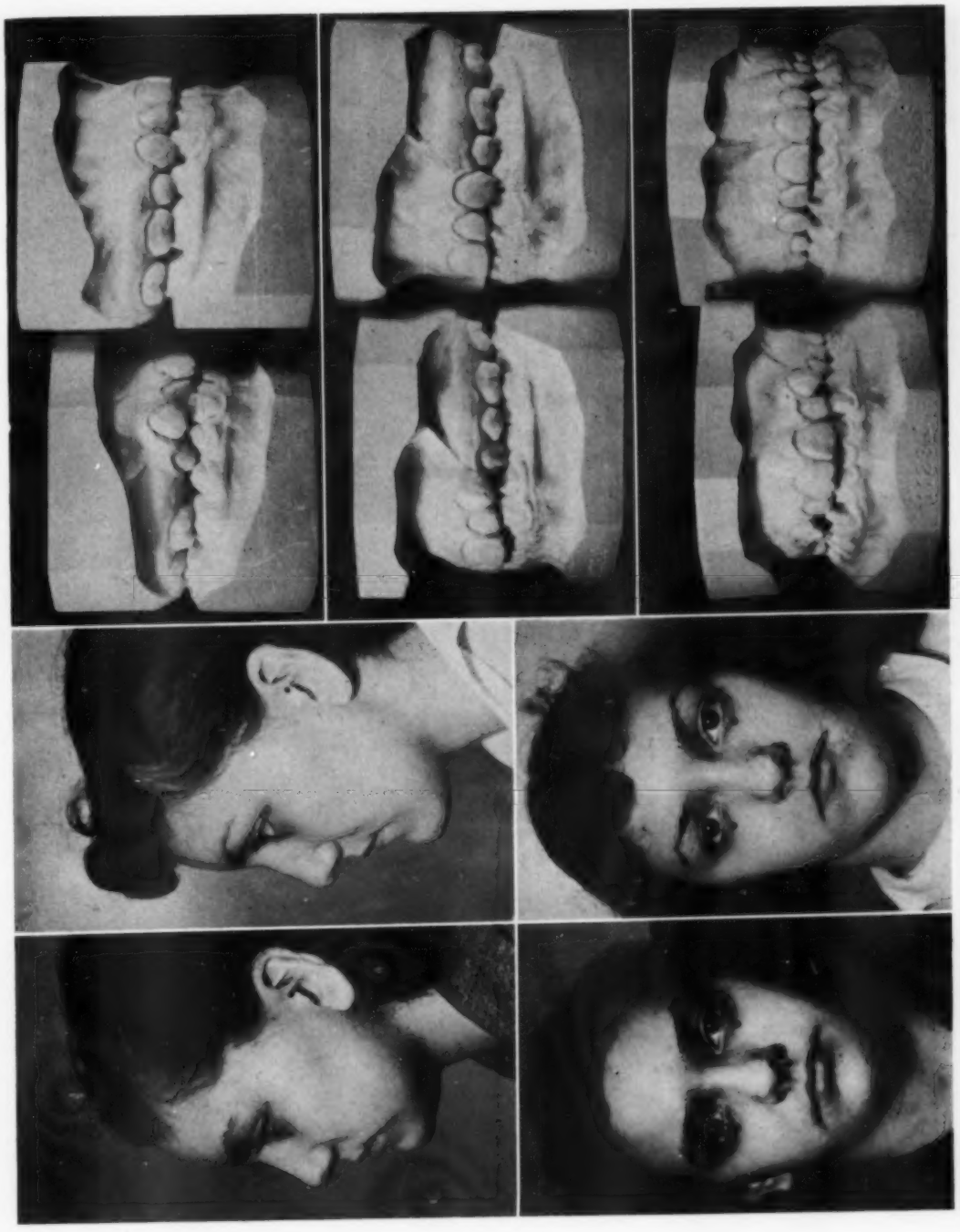


Fig. 8.

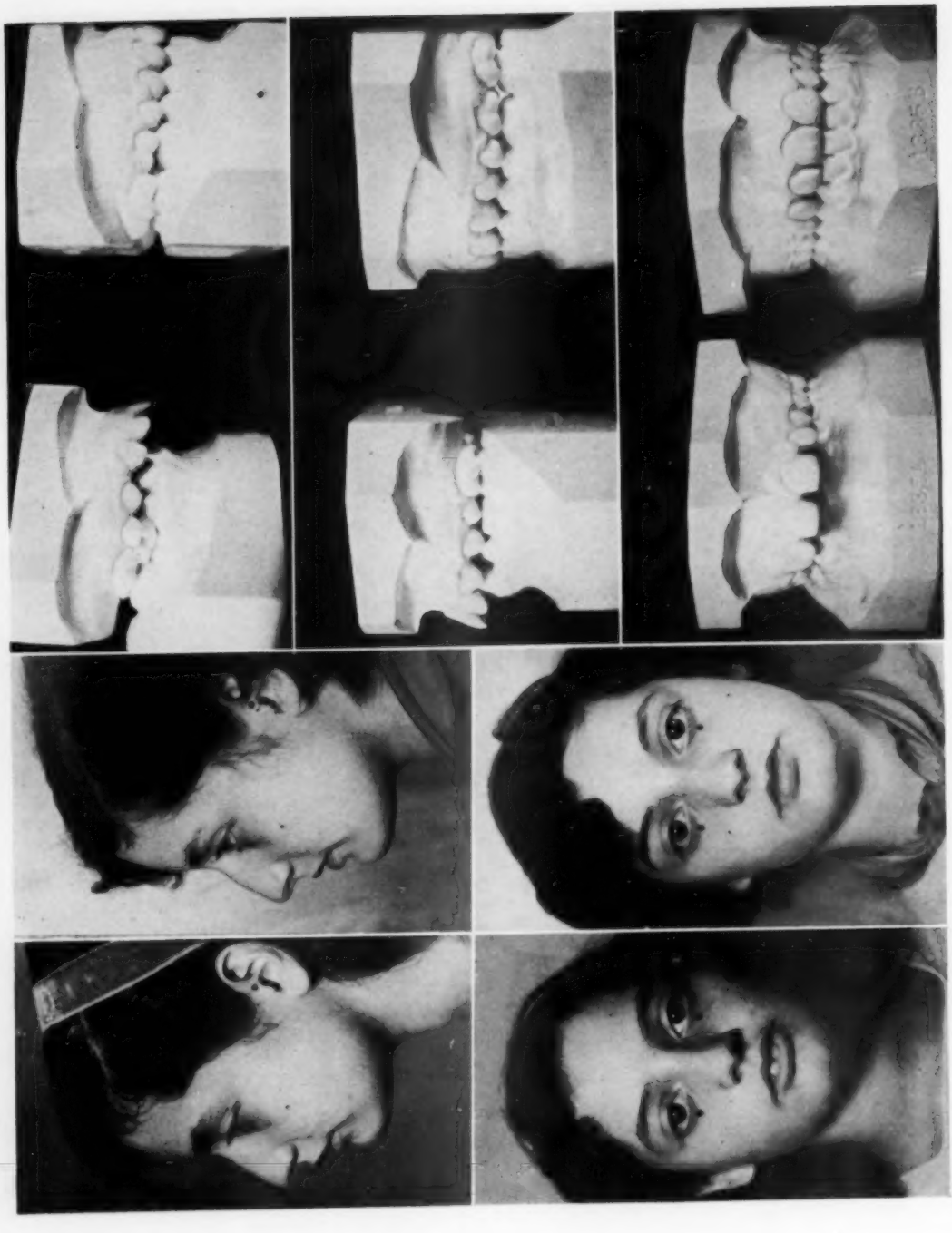


Fig. 9.

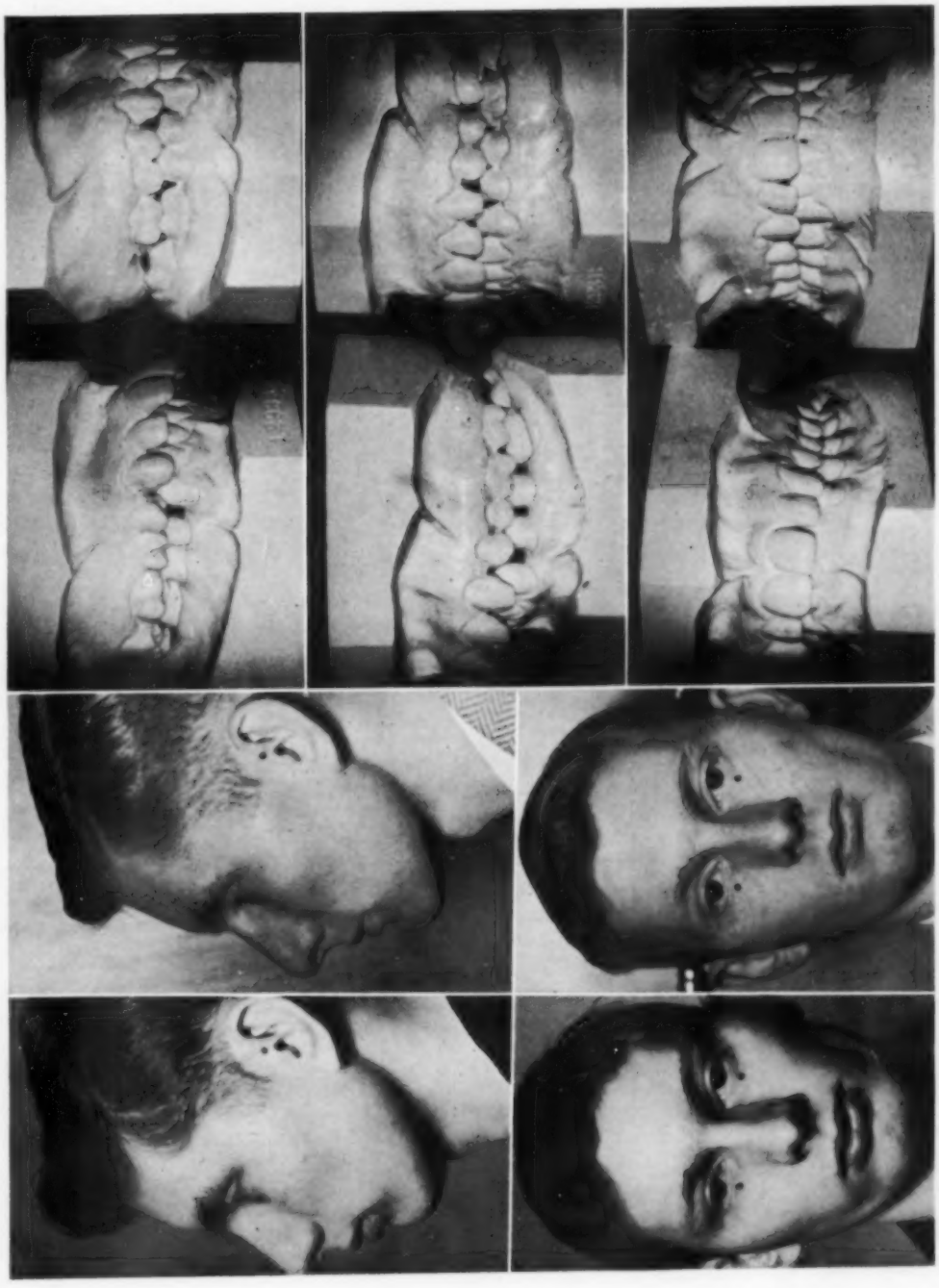


Fig. 9.

Fig. 10.

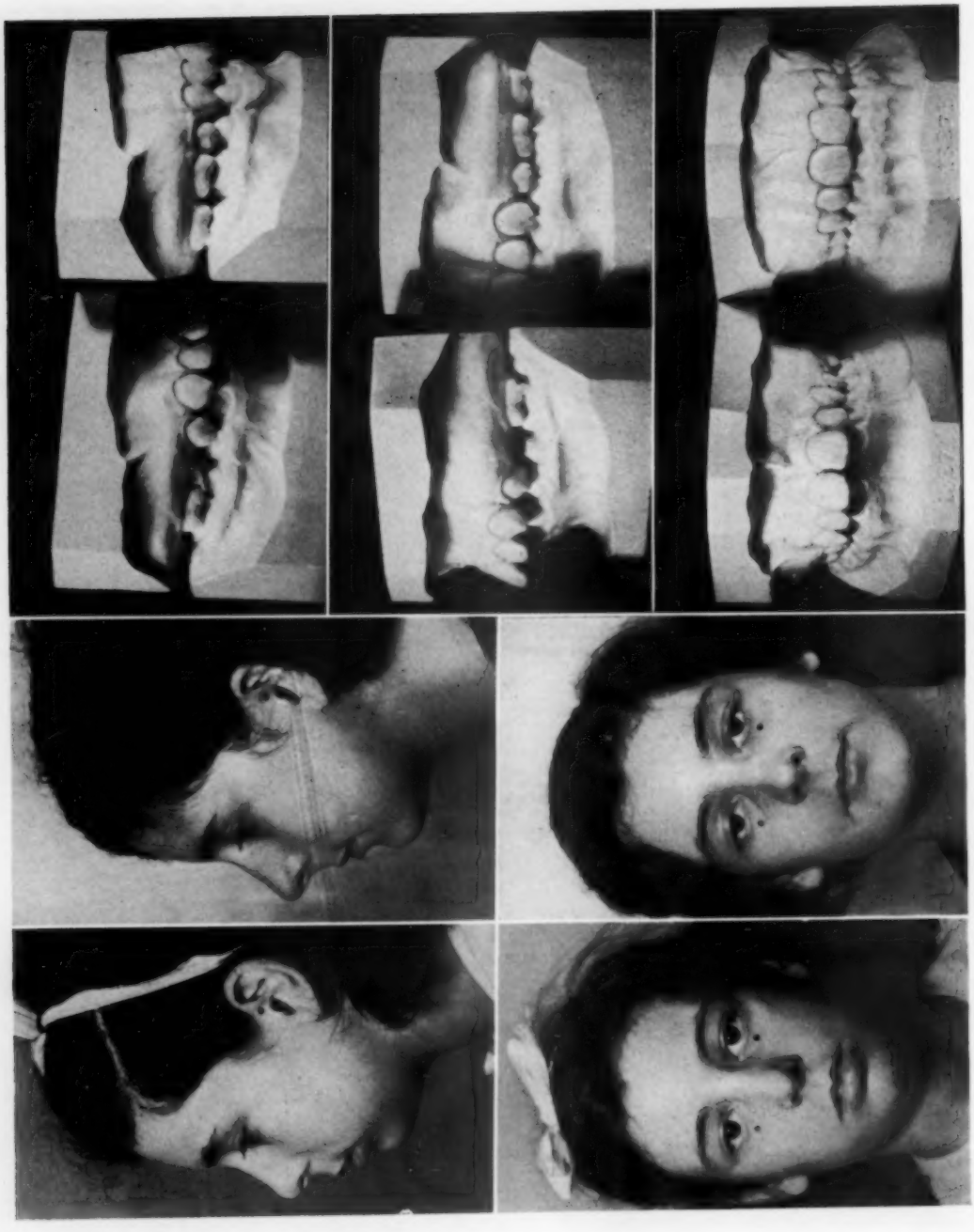


Fig. 11.

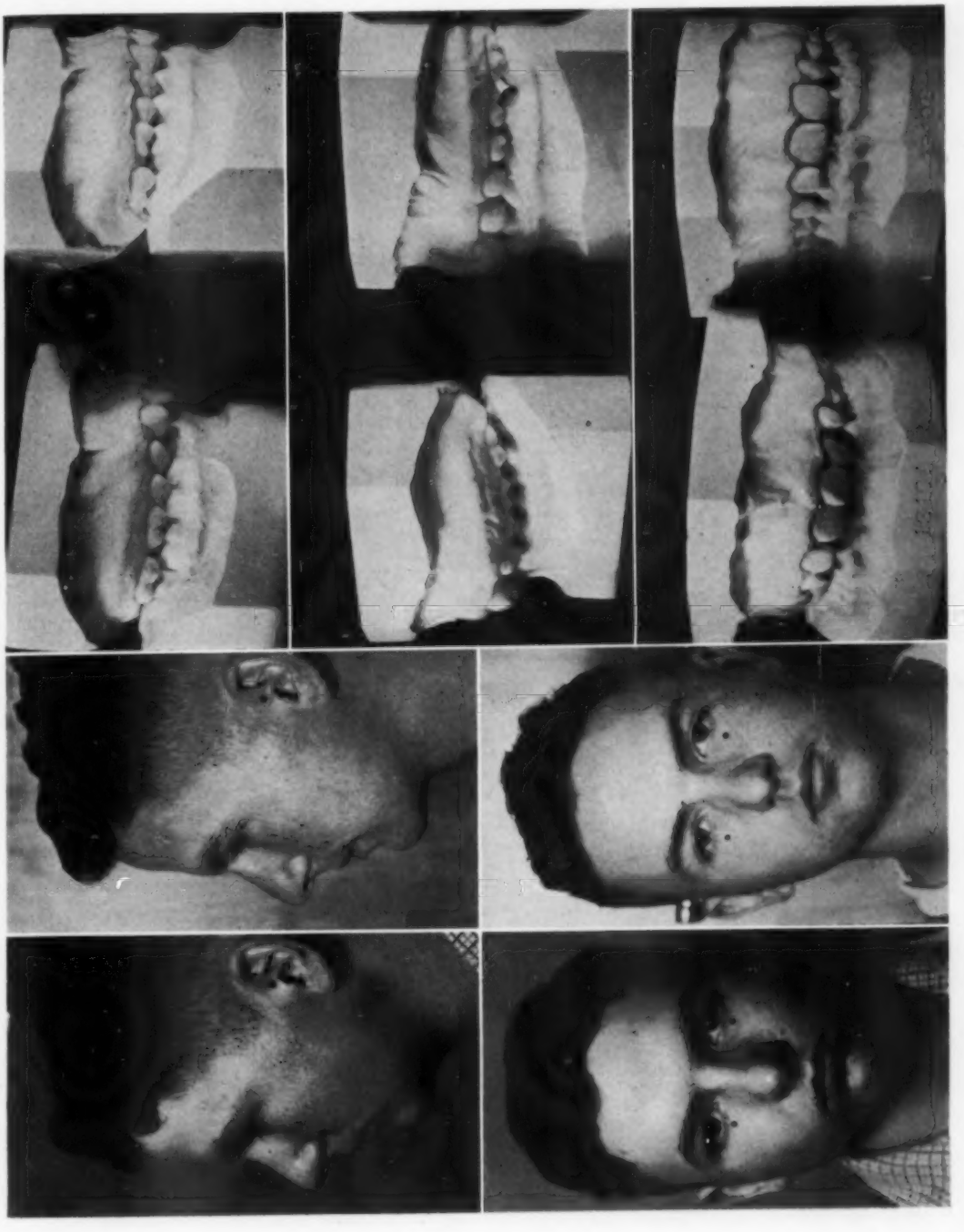


Fig. 12.

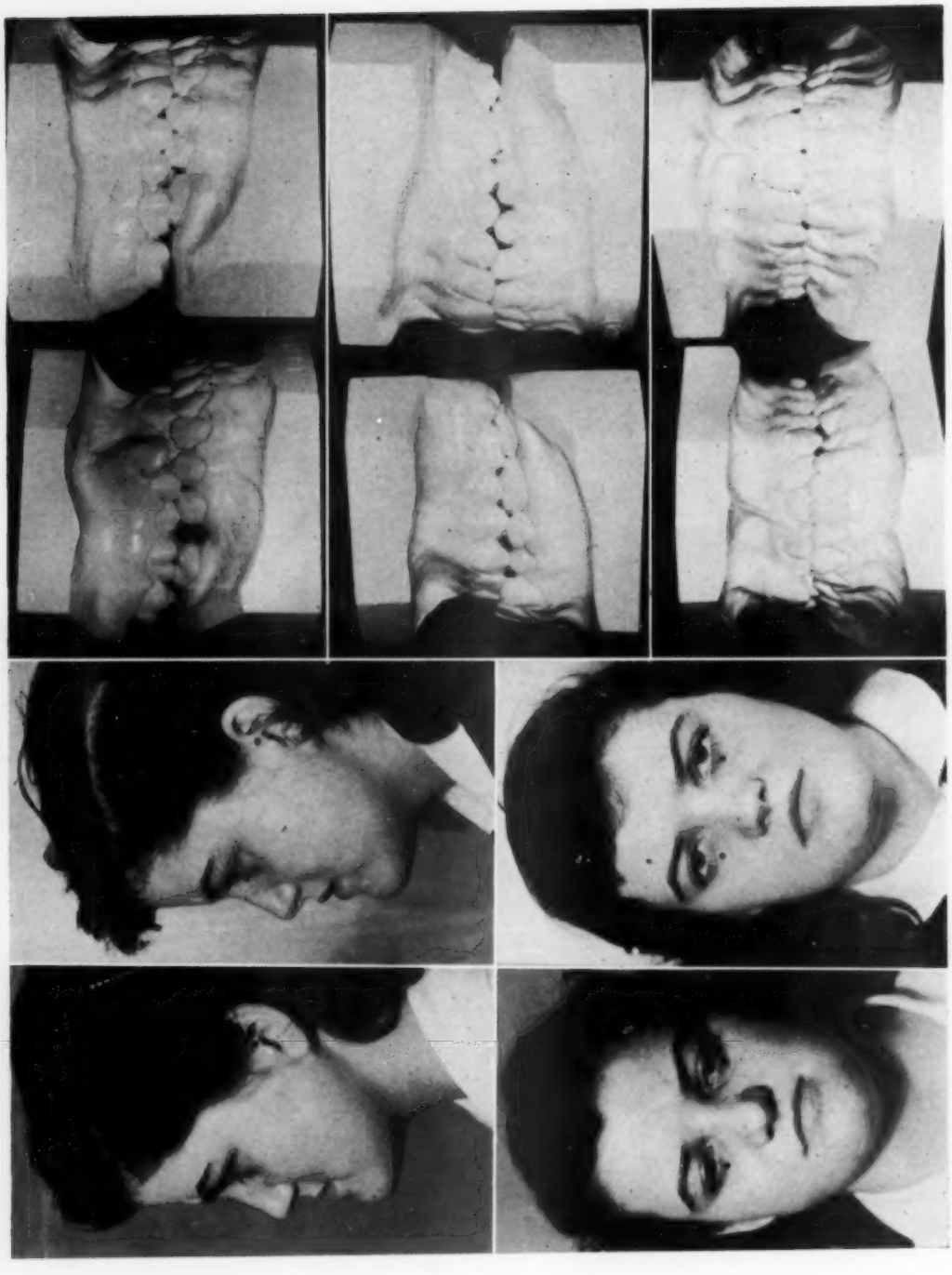


Fig. 13.

26 degrees, in which four first premolars were extracted in treatment. The casts are also shown, on the left, before, and on the right, after treatment. Note the reduction of the lip protrusion and the uprighting of the lower incisor teeth.

Fig. 7 shows the photographs and casts prior to and following treatment in a Class I, double protrusion case with a Frankfort-mandibular plane angle of 29 degrees. Four first premolars were extracted in treatment. Note the marked reduction of the lip protrusion and the uprighting of the lower incisor teeth.

Fig. 8 shows photographs and casts in a Class I, crowded case with lower incisors upright both before and after treatment. Our aim was achieved; a well-balanced face was not changed, but four first premolars were removed to allow for correct alignment of teeth upright over base. This patient had a 29 degree Frankfort-mandibular plane angle.

Fig. 9 shows a Class II, Division 1 nonextraction case with a 20 degree Frankfort-mandibular plane angle. The photographs to the right, following treatment, show a reduction of the lip protrusion, and the casts to the right show the uprighting of the lower incisors to base.

Fig. 10 illustrates a Class II, Division 1 extraction case with a Frankfort-mandibular plane angle of 24 degree in which four first molars were extracted in treatment. Note the marked reduction of lip protrusion and the uprighting of lower incisors following treatment. Also note that the upper left buccal segment was completely buccal to the mandibular teeth on that side and that the upper left second premolar was rotated 45 degrees in treatment.

Fig. 11 illustrates a Class II, Division 1, subdivision, extraction case with a 30 degree Frankfort-mandibular plane angle. Note the reduction of lip protrusion and the uprighting of lower incisors as an aim in treatment.

Fig. 12 illustrates a Class II, Division 2 nonextraction case with a 27 degree Frankfort-mandibular plane angle. Note that in the photographs to the right, after treatment, the mandible appears to be more forward as related to the head. An increase in vertical height is also apparent. Note, in the casts (after treatment) to the right, that the lower incisors were maintained upright to base.

Fig. 13 illustrates a Class III case in which a lower right first molar was lost before treatment and a lower left first premolar was extracted in treatment. The Frankfort-mandibular plane angle was 28 degrees. The photographs of the face show improvement in balance and those of the casts show improvement in occlusion after treatment.

Failure to so position the lower incisors and instead to displace the denture mesially on the base resulted in facial disharmony. Fig. 14, *A* shows facial disharmony as a result either of failure to upright the lower incisors or of tipping them labially off base, and Fig. 14, *B* shows the same patient retreated many years later with four first premolar extractions and an effort made to upright lower incisors to base. Note improvement in facial balance in the photographs to the right. The Frankfort-mandibular plane angle was 34 degrees.

B.

A.

Fig. 14.

A group of photographs of patients prior to and following treatment are shown to present the results that may be attained in treatment predicated upon the thesis of positioning lower incisors relatively upright to base. Attention must be called to the limitations of treatment as it affects facial balance favorably. Patients with large Frankfort-mandibular plane angles are usually not good subjects for obtaining good facial changes. Those patients with large incisor-mandibular plane angles in which even the removal of four teeth does not give adequate room for all the teeth may be improved facially but not as much as more favorable patients with less crowding. Development and maintenance of mandibular anchorage frequently becomes a very important part of treatment, if facial harmony is to be enhanced.

Fig. 15 illustrates favorable facial changes in a Class II, Division 1 case without extractions and with a very favorable Frankfort-mandibular plane angle of 24 degrees. Class III mechanics was used to upright lower incisors and to develop mandibular anchorage.

Fig. 16 illustrates favorable facial changes in a Class II, Division 1 extraction case with an unfavorable Frankfort-mandibular plane angle of 34 degrees.

Fig. 17 illustrates a Class II, Division 1 extraction case with a favorable Frankfort-mandibular plane angle of 27 degrees and, therefore, a better facial balance at completion than that of the preceding case.

Fig. 18 illustrates marked changes in facial balance in a Class II, Division 1, subdivision, extraction case with an unfavorable Frankfort-mandibular plane angle of 36 degrees.

Fig. 19 illustrates a Class II, Division 1, subdivision, case with extractions, resulting in a very well-balanced face with a relatively favorable Frankfort-mandibular plane angle of 28 degrees. When compared with the case illustrated in Fig. 18, note the greater degree of facial balance and harmony in the case in Fig. 19.

Fig. 20 illustrates a Class I extraction case showing very excellent changes in facial balance and harmony. The Frankfort-mandibular plane angle in this case was not obtained but it appears to be very favorable.

Fig. 21 illustrates a Class I extraction case with a very favorable Frankfort-mandibular plane angle of 24 degrees. The reduction in the lip protrusion is pronounced with a resultant well-balanced, harmonious face.

Fig. 22 illustrates a Class I extraction case with a Frankfort-mandibular plane angle of 26 degrees. While the facial change is quite marked and well balanced, one may readily note some differences when compared to the previous case (Fig. 21).

We will now take up the means and methods of making a diagnosis. To make this portion of the presentation more practical, I desire to go into the practical application of the making of a diagnosis based upon the Tweed philosophy. It must be remembered that the most important basis for the diagnosis is the relationship of the lower incisor teeth to base. Many other factors, of course, must be considered, namely, the axial inclination of the buccal and cuspid teeth, the crowding and overlapping of any teeth, and the

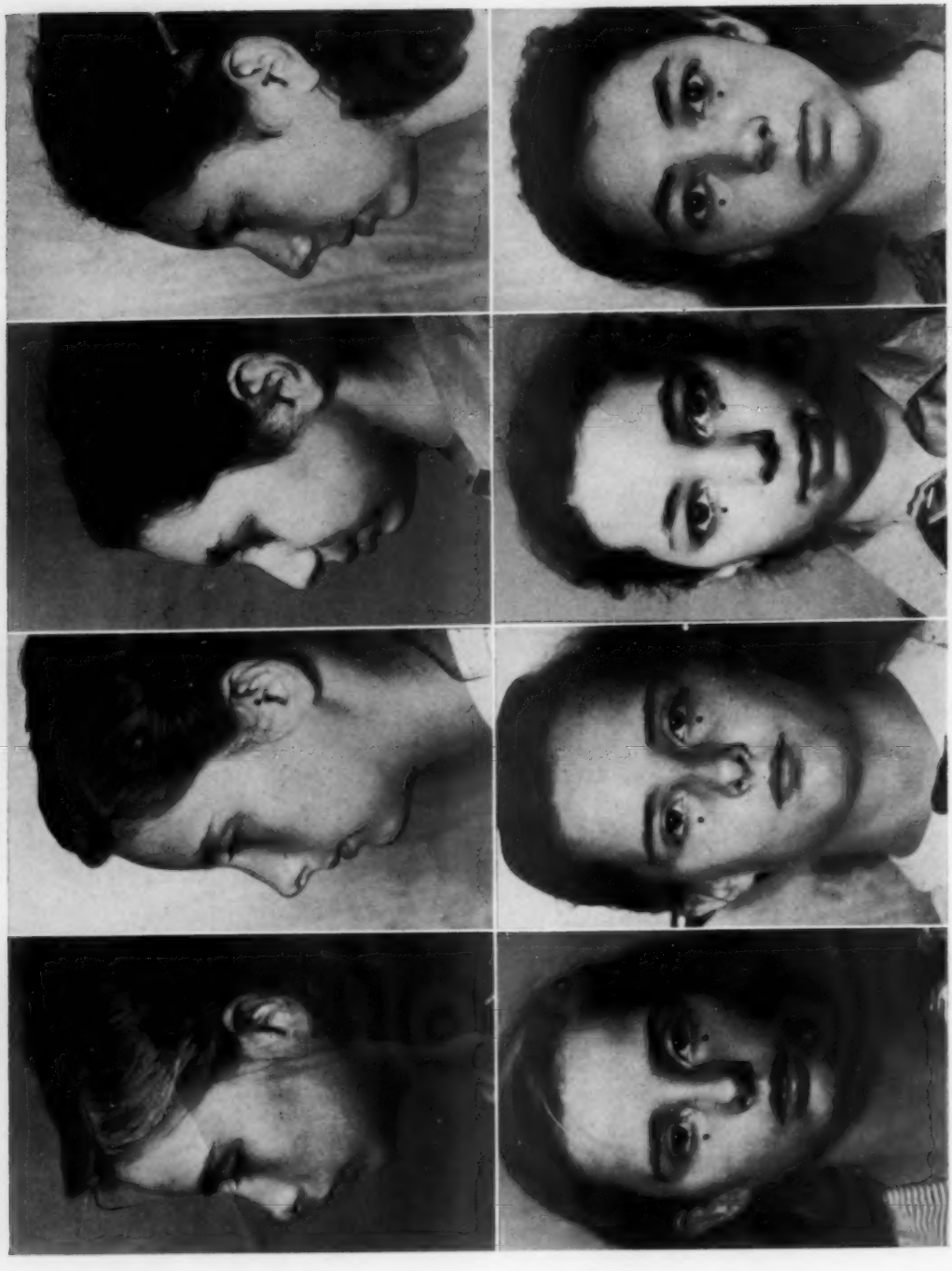


Fig. 16.

Fig. 15.

Fig. 18.

Fig. 17.

Fig. 20.

Fig. 19.

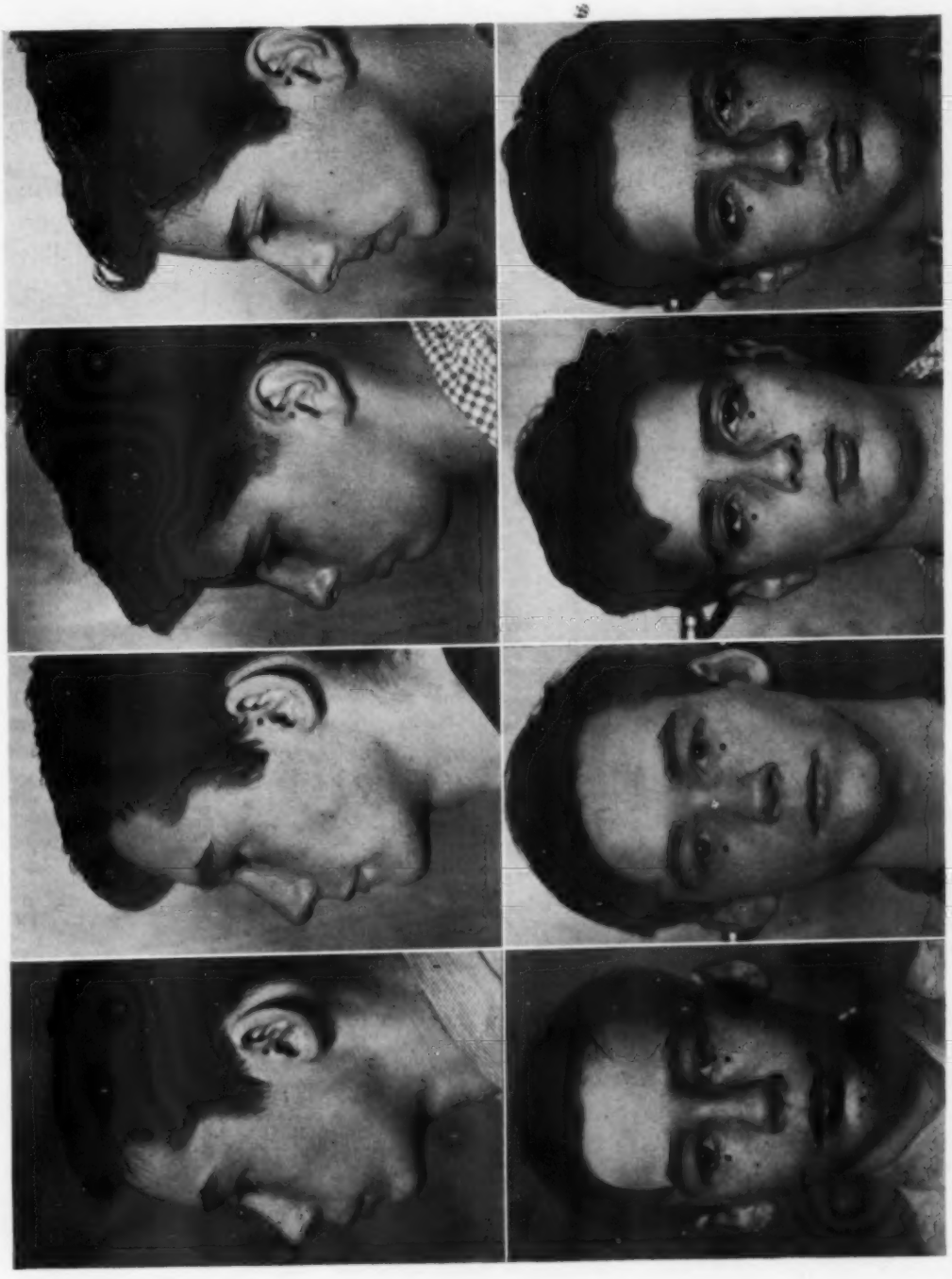


Fig. 22.

Fig. 21.

labial inclination of the upper anterior teeth. The relation of all teeth to their bases, therefore, must not be overlooked. Further, the relation of the jaws to cranial anatomy and to each other must be considered, as must the facial relations of the lips and chin and the draping of the facial musculature.

We should and do, therefore, procure good deep impressions of both dentures, making sharp, detailed casts. From the labial aspect of the mandibular cast, we may determine the degree of tipping of the lower incisors. From the incisal lingual aspect, this degree of tipping may be confirmed or, if a thickened shelf exists, we may assume that the mandibular incisors are bodily forward. The conclusions relative to lower incisal inclination may be more accurately confirmed by the use of the oriented lateral head x-ray as illustrated in Fig. 2, which also shows the use of the x-ray in determining the Frankfort-mandibular plane angle. The lateral oriented head x-ray then becomes an important factor either in making or in confirming our diagnosis.

Fig. 23, *A*, *B*, and *C* are of sectional models[7] indicating various degrees of tipping of the lower incisor teeth, *A* representing upright incisors, *B* representing labially inclined incisors, and *C* representing lower incisors that are bodily forward as indicated by the thickening (shelf) of the bone on the lingual surface.

Of great value, too, are the oriented photographs of the patient, both profile and front views.[8] Frequently, the experienced operator may determine, from the photographs alone, that the lower incisors are tipped labially to base. But much additional information may be obtained from well-taken oriented photographs. The degree of facial balance or imbalance becomes apparent to the trained observer. Lip protrusions may be readily determined as may mandibular retrusions or protrusions. The Frankfort-mandibular plane angle may be measured on the profile photographs but may be more accurately recorded by using the Frankfort-mandibular angulator directly on the face as shown in Fig. 3 and reading the Frankfort-mandibular plane angle from the lateral oriented headplate as shown in Fig. 2.

Front view photographs show areas of muscular tension, especially in the mentalis area, and these tensions in turn indicate lower incisors that are protrusive. (Note Fig. 24.)

Another important adjunct is the Kesling[9] setup for diagnostic purposes. Here again the models are used, but this time by actually cutting plaster teeth off the mandibular model, then resetting the incisors in such position as the operator considers them to be relatively upright over base, and then relating all other mandibular teeth to the incisors and to base. From this procedure, the operator may determine the adequacy of space for correctly positioning all mandibular teeth to base. If not enough room exists, he may decide what tooth units need to be removed so that all other teeth may be correctly positioned. The setup for diagnostic purposes gives information as to the severity of the anchorage problem. This problem will be taken up subsequently in the section of this article on treatment.

To sum up, then, in the matter of diagnosis as related to the Tweed philosophy in orthodontic treatment, the orthodontist must equip himself with

the tools for making an adequate diagnosis, viz., good, deep impressions from which sharp casts are made; oriented photographs, both profile and front views; oriented lateral head x-rays and a device for measuring the Frankfort-mandibular plane angle. Stress is placed upon the relatively upright position of the mandibular incisors as related to base; and to approach the normal, the lower incisors must, in treatment, be placed in what Tweed refers to as the plus 5 to minus 5 position. Further, because all teeth, both labial and buccal, have a correct position to base, very little, if any, expansion can be maintained.

An effort has been made to show faces, both favorable and unfavorable, as related to the Frankfort-mandibular plane angle and material has been submitted in an effort to point out improved facial esthetics obtained by uprighting lower incisors as related to base. This sort of treatment emphasizes the words of Case[10] when he spoke of dentofacial orthopedics as being the field in which the orthodontist works.

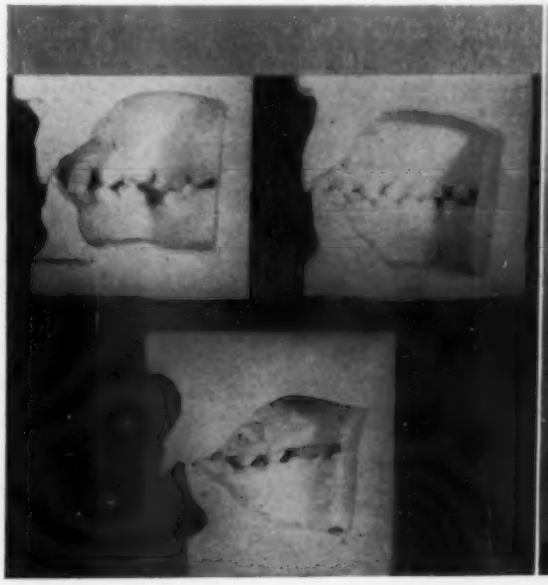


Fig. 23, *A, B, C.*

Fig. 24.

Illustrations used in Figs. 1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 14, *A*, 17, 19, and 20 are taken from a paper on "Facial Esthetics in Relation to Orthodontic Treatment" written by me.[11]

Let us follow through, now, with the orthodontic therapy as suggested by the Tweed[12] philosophy. Much has been written concerning orthodontic therapy and the numerous devices used in treatment. Many have been the papers on the edgewise appliance, as well as the many other appliances. I wish, very definitely, not to convey the idea that there is but one appliance to do the job, but, on the contrary, wish to stress that knowing what the job *is* that must be done becomes the most important factor. I might readily grant that there are orthodontists who *can*, and *do*, obtain very excellent results with appliances other than the edgewise appliance or with a combination of various

appliances. They know what they wish to obtain in an end result and they chart their course toward that end. On the other hand, many an unsatisfactory, even deplorable, orthodontic result has been obtained with the edgewise appliance, and I have (many years ago) stated that with this appliance faster and better expansion could be obtained than with any other orthodontic means known to me. The point, of course, is, "What should we attempt to attain?" "What should be our end result?" Let us list some very definite relationships.

The mandibular incisors should be relatively upright to base and, whenever possible, within the plus to minus 5 of Tweed.

All other mandibular teeth should be placed over basal bone in the general plan exhibited by the malocclusion under consideration, cross-bites excepted. All teeth should be in proximal contact relationship with the incisors and with each other. This suggests that little, if any, lateral or anterior expansion may be indulged in.

Axial inclination of all teeth should be correct.

Mandibular and maxillary teeth should be adjusted correctly mesiodistally as well as buccolingually.

Jaw relationships should be adjusted, if possible.

Rotations should be ironed out. We are merely stressing here a means to an end, viz., an effort to obtain our orthodontic objectives which are: (1) the best possible in facial esthetics, (2) stability of denture, (3) health of the denture, and (4) efficiency of the denture.

It has been my experience that in my hands and in the hands of many others, the edgewise arch mechanism lends itself admirably to bringing about the changes that we feel are desirable. We know this material has been presented time and again by well-qualified essayists, who may add their own personality and deviations which they feel enhance the efficiency of the technique, but essentially, if they follow the teachings of Tweed, they all agree that the establishment and maintenance of mandibular anchorage are of prime importance and the loss of anchorage may end in failure and even disaster.

The treatment, as generally outlined or really blueprinted, is quite orderly. Steps follow each other in methodical fashion to the point that the experienced operator may list what is to be done at 15 or 20 sittings subsequent to placing the bands and come very close to carrying through what he anticipated doing for his patient. Consequently, it seems desirable to list the various steps in treatment and this will now be done.

Bracket bands are carefully placed on all teeth including the first molars. The first molars carry a wide bracket and the second molars carry an 0.022 by 0.028 inch buccal tube. All bracket bands carry a mesial and distal staple. Bands are so placed on the teeth that a flat spring arch placed in all the tubes and brackets would eventually place all the teeth in their correct vertical level to each other in that arch.

Let us first consider treatment of a nonextraction case:

Steel arches are placed to conform with the general malocclusion, starting with 0.016 inch to obtain bracket engagement and to iron out any occlusal curve. A tip back is placed in the last molar tooth on each side.

At subsequent sittings, larger arches are placed, 0.018 or 0.020 inch, depending upon which might be engaged readily into the brackets and, again, a tip back is placed in the last molar tooth. (Note Fig. 25.)

When the 0.020 inch arch is in place, rotations should all be ironed out but this process may be started in the smaller arches. In rotating teeth, ligations are through the staples (Fig. 26) and drawn tightly to the arch and then brought tightly around the bracket. Rotating bars are used in difficult rotations (Fig. 27).

If there are spaces in either the anterior or buccal segments, they are gathered up (1) by cinching the arch with stops anterior to the buccal tubes, (2) by means of vertical loops strategically placed and activated to close spaces, (3) by use of Class III elastics, if in the lower arch, and in combination with vertical loops, (4) by means of Class II elastics, if in the upper arch, and in combination with vertical loops (Fig. 28).

Upper and lower rectangular arches are now placed to get bracket engagement with the last molar tipped back (Fig. 29).

Subsequently, tip backs (second order bends) are placed in both arches. The lower arch carries hooks between cuspids and lateral incisors on each side to receive Class III elastics (Fig. 30) and stops just anterior to the buccal tubes. The distal bend is accentuated and a slight lingual crown torque is placed in the buccal segments. A lingual crown torque is placed in the incisal segment and coordinated with the tip backs in the buccal segments. The upper arch carries tie backs just anterior to the buccal tubes and stops on the labial aspect to receive occipital force (Fig. 31) to augment maxillary anchorage. This upper arch is called the stabilizing arch and this step is known as Class III mechanics.

The Class III mechanics is used to develop mandibular anchorage prior to the use of Class II mechanics. In the development of mandibular anchorage, every effort is made to upright, or even to tip lingually, the mandibular incisor teeth and to place all of the mandibular buccal teeth in a distal axial inclination. The tip back in the last banded tooth is somewhat more marked than in the other buccal teeth. While this is being done, an effort is made to hold back the upper teeth with tip backs in the maxillary arch, which is tied back tightly, and this arch resistance is augmented by occipital force. In this arch, too, the last bend is greater than the other tip backs. From time to time, the tip backs are increased in the mandibular arch wire and the elastic forces continued until the buccal teeth are in a distal axial inclination, with the last molar tooth inclined even more so. It is felt that this distal axial inclination of the buccal teeth, together with the lingual inclination of the mandibular incisor teeth, resists the subsequent forward pull of the Class II mechanics on the teeth. At this point, mandibular anchorage is attained.

With mandibular anchorage established, Class II mechanics is instituted (Fig. 32). The tip backs are increased slightly in the mandibular arch and this arch is now tied back tightly to create a unit of anchorage or resistance. Very definitely increased tip backs are placed in the maxillary arch. Occipital force is discontinued and Class II elastics are continuously worn.

The maxillary tip backs are increased from time to time. When the mesiodistal discrepancy has been adjusted and the overbite reduced to about end to end in the incisal segments, the Class II elastics are discontinued. Vertical elastics are placed to seat the cusps (Fig. 33).

Final positioning arches are placed to adjust for slightly improved axial inclinations or a Kesling positioner may be used to do the final positioning and space closures. The operator then decides if retention is required and, if needed, places either an upper or lower acrylic retainer, or both. With this mode of treatment, retention needs are being constantly reduced. We are also now using Kesling positioners to retain Class II, Division 1 cases.

We will now consider the four first premolar extraction case. The steps are as follows, after the teeth are out:

Upright buccal teeth with steel arches of 0.016 inch, 0.018 inch, 0.020 inch, and 0.021 inch by 0.025 inch.

Place rectangular sectional arches with tip backs and vertical loops to first further upright the cuspids. This is done by activating a sectional arch through the distal staples of the cuspids (Fig. 34). When cuspids are upright, new sectional arches are fashioned which are seated into the cuspid brackets (Fig. 35). Tip backs are placed in these arches and the sectionals are activated to carry the cuspids distally in a relatively upright position. The distal cuspid staple is tied to the arch to keep the cuspid from rotating. As the cuspids go back, the incisors usually space and follow the cuspids. The cuspids may also be carried distally by coiled springs on both arches either from cuspid to cuspid or by small coils (Figs. 36 and 37). A removable acrylic plate with finger springs may be used to carry the upper cuspids back (Fig. 38). When the canines have been carried back far enough, attention is given to the closure of the remaining mandibular spacings and to developing mandibular anchorage.

A rectangular stabilizing arch is placed on the maxillary denture. This arch carries tip backs and tie backs and stops or hooks to engage occipital force. The maxillary arch is tied back tightly after the last tip on each side is somewhat increased. The mandibular arch is also rectangular with vertical loops in the vicinity of the first premolar spaces on each side. Hooks are placed between the cuspids and lateral incisors to receive Class III elastics. Tip back bends are placed in the buccal segments of this arch and tie backs are placed anterior to the molar tubes to activate the vertical loop springs. The incisal segment of this arch is rounded so that the incisors will tip back with less chance of the roots going labially. The incisal segment is first tied in, then the loops are activated by tying back to the buccal tubes. Finally, the arch is seated in the brackets of the buccal teeth and tied in. Class III elastics are placed from the hooks between the lateral incisors and cuspids in the mandibular arch to the distal ends of the maxillary arch (Fig. 39). The resistance of the maxillary arch is augmented by occipital force against that arch to be worn all night long and as much more as is possible.

When the spaces in the mandibular arch are closed and the buccal teeth are tipped distally, the process is reversed. A rectangular stabilizing arch,

with tip backs and tie backs, is now placed in the mandibular arch and securely seated, with the last tip back somewhat greater than the others. The maxillary arch now carries a vertical loop on each side in the vicinity of the first premolar space and tie backs anterior to the buccal tubes to activate the loops and tip backs in the buccal segments. Hooks are placed between the

Fig. 25.

Fig. 31.

Fig. 26.

Fig. 32.

Fig. 27.

Fig. 33.

Fig. 28.

Fig. 34.

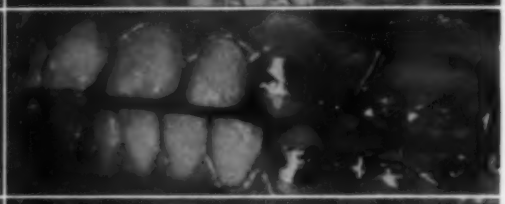


Fig. 29.

Fig. 35.

Fig. 30.

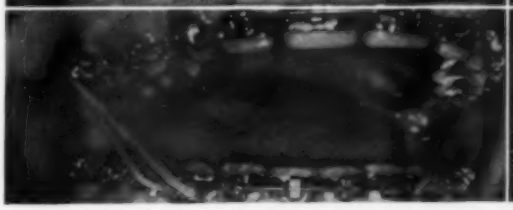
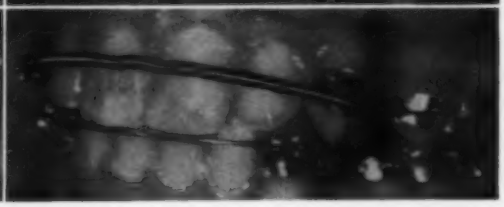


Fig. 36.



lateral incisors and cuspids to receive Class II elastics, which are now placed from these hooks in the upper arch to the distal ends of the lower arch on each side (Fig. 40). The incisal segment above may be rounded. The upper arch is tied in, in the same sequence as was the mandibular arch in Class III mechanics. If, by the time all spaces are closed, the mesiodistal relationship is not completely adjusted with the loop arches, they are replaced by regular rectangular arches with tip back bends.

When the mesiodistal relationship has been established, it may be necessary to adjust the lower to the upper teeth midlines by the use of Class III elastics on one side and Class II elastics on the opposite side[13] (Fig. 41).

After this stage, all of the cusps may be seated with vertical elastics and an open-bite may be reduced in the same manner (Fig. 42).

The final positioning is done with arch wires adjusted to attain axial inclinations, depressions, or elongations that may be desired. Space closures are attained by removing some bands and cinching the arches. The final positioning may also be accomplished with a Kesling positioner.

Frequently no retention is used, especially in extraction cases. If it is used, the time has been definitely reduced to about three to six months. Acrylic plates are used for retention in both the upper and lower arches. I am using some positioners as retention, especially in Class II cases.

Fig. 37.

Fig. 40.

Fig. 38.

Fig. 41.

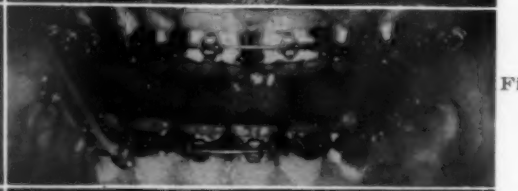


Fig. 39.

Fig. 42.

It certainly must be understood that, in an article such as this, it would be impossible to cover every detail of the technique in every case. Actually, I have drawn an outline that can be, and is, followed in an orderly fashion in almost every case. Under very favorable conditions, it is possible to eliminate some steps. For example, rotations need not be ironed out where none exist. None will fail to use Class II mechanics when a Class II relationship exists but none should fail to use Class III mechanics to establish adequate mandibular anchorage. If this is not done, the case may not end up with the mandibular incisors relatively upright to base and we may not obtain: (1) the best in facial esthetics, (2) the best in function, (3) the best in health, and (4) the best in stability.

Let us stop the wishful thinking that the incisors will upright for us after treatment or that the chin will grow forward under the incisors due to function, but rather let us use the findings of the scientists, viz., that the jaws cannot be grown with orthodontic appliances and that teeth cannot be set back

distally en masse. Let us recognize the limitations of ortohdontic procedures and the limitations inherent in the material we labor with. Let us see to it that the scar we create is compensated for, more than fully, by the good we do for our patients. I again make the suggestion, as have many others, notably Case, Tweed, and Higley, that the role of the orthodontist is not that of the tooth straightener but rather that of the dentofacial orthopedist.

REFERENCES

1. Tweed, Charles H.: History of the Evolution of the Tweed Philosophy. (Unpublished; in the syllabus presented to the Tweed Foundation at Tucson in 1950.)
2. Tweed, Charles H.: A Philosophy of Orthodontic Treatment, AM. J. ORTHODONTICS AND ORAL SURG. **31**: 74-103, 1945.
3. Margolis, Herbert I.: The Axial Inclination of the Mandibular Incisors, AM. J. ORTHODONTICS AND ORAL SURG. **29**: 571-594, 1943.
4. Tweed, Charles H.: Frankfort Mandibular Plane Angle, AM. J. ORTHODONTICS AND ORAL SURG. **32**: 175-220, 1946.
5. Lewis, Samuel J.: The Treatment of Malocclusion With and Without the Removal of Dental Units, AM. J. ORTHODONTICS AND ORAL SURG. **32**: 520, 1946.
6. Savitz, Maurice J.: The Angulator—an Instrument for Measuring the Frankfort-Mandibular Plane Angle, AM. J. ORTHODONTICS AND ORAL SURG. **34**: 1014-1016, 1948.
7. Lewis, Samuel J.: The Treatment of Malocclusion With and Without the Removal of Dental Units, AM. J. ORTHODONTICS AND ORAL SURG. **32**: 518, 1946.
8. Simon, Paul W.: Fundamental Principles of a Systematic Diagnosis of Dental Anomalies, translated by B. E. Lischer, Boston, 1926, The Stratford Company, pp. 114-133.
9. Kesling, H. D.: Predetermined Pattern as a Diagnostic Aid, AM. J. ORTHODONTICS AND ORAL SURG. **33**: 43-44, 1947.
10. Case, Calvin S.: Dental Orthopedia, ed. 1, Chicago, 1908, C. S. Case Co., p. 7.
11. Herzberg, B. L.: Facial Esthetics in Relation to Orthodontic Treatment, Fortnightly Rev., Chicago Dent. Soc., pp. 7 to 15 and 22 to 35, inclusive, April 1, 1951.
12. Tweed, Charles H.: The Application of the Principles of the Edgewise Arch in the Treatment of Malocclusions, Angle Orthodontist **11**: 12-67, 1941.
13. Abelson, Josephine M.: A New Method of Treating Unilateral Posterior Occlusion, Class II, Division 1, Sub-division, AM. J. ORTHODONTICS AND ORAL SURG. **30**: 31-39, 1944.

7200 S. EXCHANGE AVE.

ORGANIZATION RESPONSIBILITIES OF ORTHODONTISTS

BERNARD G. DEVRIES, D.D.S., MINNEAPOLIS, MINN.

EVERY member of an organization is essentially a stockholder in it and as such should be actively interested in the structure of the "company," its aims and purposes, its sphere of activity, its past record, and its present status. A professional organization differs from a business organization in that the former is not activated by a profit motive which is expressed in dollars and cents. It does, however, have a definite purpose and aim in its operation. It shall be my purpose to dwell upon the various facets of our organization and to point out what the parent "company" means to each of its "stockholders" and vice versa.

The actual physical setup of the American Association of Orthodontists is very adequately expressed in its constitution and bylaws, copies of which are sent to every member of the organization. This volume is likely to make dull reading for the rank and file of our membership, although it has real significance for those to whom the management of the association has been entrusted. Bringing a review of the basic structure and activities of our association to our membership through personal contacts such as this affords an opportunity to personalize its significance to each member. In this way, perhaps, an attitude of merely academic interest in his organization on the part of a member might be changed into one of active interest and helpfulness. Membership in any organization, while it is a privilege, surely connotes a responsibility to the organization, the least of which is, perhaps, a full and accurate knowledge of its basic activities and aims. Lack of such knowledge often results in unfair criticism for, as some wag has expressed it, "men usually are down on what they're not up on."

In Article II of the Constitution of the American Association of Orthodontists is set forth the following: "The object of this Association shall be: to advance the science and art of orthodontics; to encourage and sponsor research; to strive for higher standards of excellence in orthodontic instruction and practice; and to contribute its part in health service."

These objectives might be considered suitable for personal as well as organizational attainment. However, over-all effectiveness of the implementation of the directives implied in these objectives in relation to society, public welfare, and orthodontics itself is only accomplished through the grouping of individuals into a strong, unified association. To the degree with which we, as individuals, take these objectives personally will our entire organization be really strong and effective. In my opinion, this is one of the foremost responsibilities which each one of us has assumed in accepting membership in our association. Let us make no mistake about it, the public will be the first to detect any compromise

This article was presented at the meeting of the Central Section of the American Association of Orthodontists, St. Paul, Minn., Oct. 1, 1951.

in an organization's interpretation of its objectives or any suborning of its stated ideals to those of lesser import. This applies particularly to the objectives "to strive for higher standards of excellence in orthodontic instruction and practice; and to contribute its part in health service."

It might be well at this point to recall to your minds the structure of the governing body of our association. The officers are a president, president-elect, vice-president, and secretary-treasurer. These officers serve as members of the Board of Directors, the governing body of our association, which, in addition to the officers, is composed of one delegate from each of the seven sectional societies. Next year the number of delegates will be enlarged to eight because of the formation of an additional section, to be known as the Mid-Atlantic Section. In addition to the officers and delegates from each section, the chairmen of all elected committees, of which there are eleven at the present time, form the remaining directors. As other elected committees are created, they will, of course, have representation on the Board of Directors. It thus becomes evident that the men entrusted by the membership to carry on the business of the organization comprise not only the officers per se, but also your sectional representatives and active committeemen, who should be well aware of their responsibilities, both to the membership and the organization. They are as strong as you are and as susceptible to the will of the majority of the membership as in any organization based upon proper democratic principles. To see that your parent body is made aware of the interests and wishes of the membership at large is the responsibility of the sectional organizations and basically the active members in it.

The sphere of activity of the American Association of Orthodontists has been enlarged in consonance with the universally increased consciousness of the interrelationship of many human endeavors. Our profession of orthodontics occupies no unrelated, insular, "ivory-tower" niche. It is keeping abreast of its responsibilities to its members and to the public which it serves. The activities of some of your committees, however, are especially significant of the enlarging influence of our professional development. I shall list a few of the more important ones.

1. *The Education Committee.*—This committee has duties which pertain to the vital and fundamental matter of education in orthodontics. Education is never static and most particularly is this true in scientific fields. Facts determined through today's research become intrinsic parts of tomorrow's educational programs and thus basic knowledge and its application to scientific skills keeps elevating the standards of ministrations to the public in professional fields. To provide more knowledge for more men is a major problem in our profession of orthodontics, as in many others. Educational institutions are hard put to include all of the ever-increasing fund of knowledge felt to be essential to today's graduate into curricula already bulging at the seams. Professions automatically and constantly are driven inexorably to seek and discover new truths, but basically society at large provides the spur in its demands for better service to greater numbers.

Your association is aware of its responsibility in providing a sufficient number of well-trained men to satisfy the demands of the public. There is a balance here which cannot be overlooked. The Education Committee is a vital link between our association and our educational institutions. It takes active interest in all dental educational developments. It plays an important part in the deliberation of all groups concerned with dental education at both undergraduate and graduate levels. Witness the growth in orthodontic educational facilities in recent years and we become aware that our association is meeting its ever-increasing responsibility in this field.

2. *The Research Committee.*—This committee has representation automatically on the Program Committee, becoming thereby an intrinsic part of each annual program of your association. Through it are transmitted to our membership "reports of researches in problems related to the science of orthodontics that are being carried on by members of the American Association of Orthodontists and by other *persons and institutions.*" Research is the life of our profession and your association is actively fostering the work of this committee. At the annual meeting of our association to be held in St. Louis next April an important position will be given to the scientific section of the program. Reports on original researches conducted by individuals in the graduate schools of many of our leading universities are here presented. Interest in this part of our annual programs not only is a rewarding gesture to those who have devoted much time and energy toward the solution of our problems, but also certainly cannot help but stimulate the thinking of the listener. The scientific part of our annual program merits your enthusiastic support.

3. *The Public Health Committee and* (4) *The Public Relations Committee*

These two committees are both concerned with our profession's responsibility to the public. The Public Health Committee acts in "liaison with other agencies in the promotion of programs for improvement in orthodontic care." It shall "conduct studies of the orthodontic needs of the public." Public health consciousness has made the activities of this committee more and more important in the past few years. The same is true of the activities of the Public Relations Committee which holds of paramount importance the active interest of our association in all matters pertaining to the dental welfare of the public. The value of these two committees to our association is great. The relationship of our profession to the public and its responsibility to the public are two of our most vital concerns and they should be the serious concerns of every member.

Public relations begin in the practice of every orthodontist. Here is where the individual should strive to conduct himself so that his public will be adequately served, where he shall exert his influence against unfair practices, and where his interest in all matters pertaining to the elevation of standards leading to the betterment of the health of the public shall react to the dignity and worthiness of his profession. I cannot stress this point too emphatically. Never should an individual who practices any phase of the healing art forget that he is a part of a great group and that his actions can bring credit or discredit upon his profession. There are frequently found in every profession those who

arrogate to themselves the role of the reformer to the point where accusations and criticism are almost allowed to attract public attention. When the dirty linen of embittered controversy within a profession is carelessly allowed to be hung where the public can gaze upon it, public relations will invariably suffer.

5. *The Publication and Editorial Board.*—This Board is responsible for the publication of the AMERICAN JOURNAL OF ORTHODONTICS, the official publication of the American Association of Orthodontists, the American Board of Orthodontics, and the sectional component societies. It works closely with the editor-in-chief of the JOURNAL. No committee in our association reaches out to every member as does this committee. Twelve times a year you are indebted to it for supplying you with the only publication of its kind in the world. While this board represents the authority of the American Association of Orthodontists and is therefore responsible to it, nevertheless it could not operate without the steadfast and loyal cooperation of its editor-in-chief, the associate editors, the staff of sectional editors, adequate secretarial assistance, and a cooperative publishing company.

You should know that your JOURNAL reaches into all parts of the world where orthodontics is practiced and its pages are devoted exclusively to our profession. It is readily evident that our JOURNAL has matured through the years until it has become international in its influence. This fact places an added responsibility upon those who guide its policies for they are aware of its potentialities in the realm of public relations. A journal such as ours, while its circulation is limited to the field of practicing orthodontists and institutions and individuals interested in teaching orthodontics or allied subjects, nevertheless is a part of a universal professional literature which is read by profession and laity alike. The printed word is still the most potent means of disseminating information, particularly of a scientific nature, but also it is the most vulnerable to attack and criticism because of the irrevocable quality of its presentation. This fact demands a more-acute-than-ordinary vigilance on the part of the editor who gives final scrutiny to editorial and other articles which appear in the JOURNAL. We are extremely fortunate in having men of the highest integrity and ethical consciousness represent each one of us in the capacities of editor-in-chief, sectional editors, and committeemen.

I am dwelling at some length on our JOURNAL and its function because our literature is a true reflection of the thinking of our profession. We, as individuals, make our own literature and, frankly, much of it has not been good. We can make it better. It must be conceded that not all orthodontists are skilled in the art of writing, and, unfortunately, many skillful writers are not good orthodontists. However, if the subject material for a paper is sound and pertinent and of value as a contribution to our literature, its presentation should adhere to certain requirements in its preparation for publication. All writers are essentially soloists who tacitly or otherwise are likely to resent criticism of manuscript. This also applies to the use of illustrations. Many essayists and lecturers today use large numbers of lantern slides during presentation of their

material. This enhances audience-interest without question, for visual induction is swift. The speaker also talks effectively from slides. When, however, such a paper is requisitioned by the American Association of Orthodontists for publication, the difficulty begins. First of all, everything of an extemporaneous character will be lacking in the author's written paper and its value may suffer thereby. Second, there will be found altogether too many illustrations, many of which were used for extemporaneous elaboration of the written text. The cost of these illustrations, many of which are superfluous, makes impossible the publication of the article in its presented form, and the contributor must be so advised by a critical editor.

Frequently contributors resent a rewriting or reassembling of a paper already presented before a sectional or organizational group. The presentation has been made, it has been enthusiastically received, and the author feels he has already made a definite contribution. But has he? It is conceded that he has benefited all of his listeners, but what about the large majority of men to whom his presentation was inaccessible? If it is not preserved in the literature it has lost most of its efficacy. *For that reason all sectional program committees should exercise greater care in advising those who appear on their programs that all contributions be made with publication in mind.* Emphasis should be placed on using only a sufficient number of illustrations adequately to support the text in the essay's printed form. If a large number of slides are to be used in support of extemporaneous remarks, the lecturer should be warned that his presentation cannot be published. But herein lies a great danger, for much worth-while material is so presented, and if this is to be preserved in our literature, essayists must be requested to prepare their contributions in form suitable for publication. If this becomes the program policy in our sectional meetings, disgruntled essayists will become fewer, editorial and proofreader headaches will be lessened, and much excellent material will be added to our literature.

6. *Interrelations Committee.*—Another committee which merits special mention and which is assuming larger proportions steadily is the committee on interrelations. Our organization no longer remains in isolation. Many European orthodontic societies have been formed. The South American and Latin American countries have organized associations of orthodontists. Mexico to the south of us has almost become an integral part of our association through the close affiliation of its members with ours. Our Canadian fellow orthodontists are an important and rapidly growing part of our American Association. The programs of our association must always be accessible to our foreign visitors who must be made to feel welcome at our meetings. Science knows no boundaries in its application, and a feeling of brotherhood among fellow orthodontists throughout the world has become an increasingly important development in our organization. Again, this is one of the committees whose activities influence not only professional relations, but public relations as well.

There are many other committees in our association which are intensely important and necessary to its efficient administration. I have mentioned only

those few whose activities seem to be progressively increasing in proportion to greater demands which are being made upon our profession and in response to the steady growth of the organization.

The American Association of Orthodontists has just completed the first half century of its existence. It is interesting to observe its growth during those years. The statistics are as follows:

1912	74 active members
1920	196 active members
1930	326 active members
1940	572 active members
1950	1,056 active members
1951	1,151 active members

Already these figures are inaccurate, for new members have been admitted through those sections which have held meetings since our annual meeting last April. A breakdown of membership in various sections reveals that our Central Section has on record as of April, 152 active members, which number will certainly be increased during this meeting. The Central Section is now the third largest in the organization, being surpassed by the Northeastern and the Pacific Coast Societies. For the benefit of our collective ego it may be pertinent to observe that the Central Section has supplied eleven presidents to the American Association of Orthodontists and eighteen national meetings have been held within its area. As you probably already know, our Central Section is composed of the states of Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Iowa, Missouri, and Provinces of Manitoba, Alberta, and Saskatchewan in the Dominion of Canada. This is a large geographic area and well-planned meetings are essential to maintain a high member-interest. In our Central Section the Chicago Association of Orthodontists is the largest independent group within the organization, and in that respect our situation is analogous to those other sectional societies which have large municipal centers within their boundaries. There is a danger here in that the large municipal organizations may detract the interest of a sizable group of men from the activities of the section as a whole and this must be guarded against.

The sections of the American Association of Orthodontists, now eight in number, form the basic strength of the parent body. As the sections are strong, so is the whole organization strong, and vice versa. The sections must be sound, well governed and effective in their jurisdiction. If, for any reason, a body is split it loses its influence as a body. The public is quick to notice this. If our association ever becomes weak and ineffective it will be from forces within it and the weakening process will first become apparent in our sectional societies. We all know that factions exist in our organizations which can be menaces to organizational solidarity. This solidarity or lack of it is readily perceptible by a discerning public and this fact must not be lost sight of. It is true that by disagreement we find light and by conflict we achieve growth, but it is equally true that a profession and its public significance is larger than personal differences.

The key to the most effective way in which a member can be of the greatest value to his association, club, fraternal order, or what not, lies in his personal conduct. My own thinking is that each one of us has an organizational responsibility here as well as an individual responsibility. I believe I may speak frankly and say that many of the so-called headaches which arise in the administration of our association are caused by individuals who cannot or will not consider themselves representatives of our entire profession and our association. Codes of ethics were never devised for men who have an inherent respect for human relationships. They were devised for those who have never possessed or have lost an appreciation of any and all motives or aspirations, save their own. The American Board of Orthodontics, on which I had the privilege of serving for many years, was never harassed in its appraisal of the clinical and didactic criteria of an applicant for certification as it was in dealing with questions of ethics as they applied to the individual. Incidentally, a question of ethics should never have to be settled by such a body as the American Board of Orthodontics. That is something which should be determined in the district and/or sectional organizations to which an individual seeks admittance. One often wonders why any specialist should *ever* seek a larger sign, use conspicuous methods for self-aggrandizement, or decry the methods of confrere's. Is it not sufficient that one *is* a specialist in an outstanding specialty in dentistry and so regarded by the community in which one's practice is conducted? It behooves every one of us to guard his privileges as a specialist most jealously and to be certain that they are merited.

Stretching ethical conduct on the part of an individual or individuals to the near breaking point has produced definite tensions in whole sections. The reverberations frequently come to the attention of the Board of Directors of our association and this group has been called upon to render opinions in the cases under consideration. Such occasions are testimonials to poor member-association relationship. They do no good to the individual, the section, or the parent association. They are usually the result of an individual's lack of appreciation of his importance to his association and the harm he may do it and his profession. After all, each one of us is an individual spokesman for and exemplar of our entire profession and our organization.

The orthodontist today has much to stimulate his thinking. Concepts of analysis, diagnosis, and treatment are being changed and modified rapidly. He is indeed a self-righteous man who has not and does not feel the constant challenges which confront him as a clinician. It is not a time to crawl into a mental fox hole and tacitly or volubly, for that matter, subscribe to the philosophy that all that is good has been done. Neither is it a time to follow but one cherished group of commandments and, like the reformers of old in their search for the Holy Grail, designate all others as heretics. To follow either of these paths will surely destroy the integrity and power for good in an association which has forged steadfastly forward during the past fifty years.

I would urge every member of our association to accept responsibilities and assignments in the administration of his local, sectional, and national organiza-

tion as opportunity presents. Only by active participation in an enterprise can one truly appreciate its scope and effectiveness. Opportunely allow me here to quote C. F. Stenson Dillon in his recent address before the Pacific Coast Society of Orthodontists, and with whom I agree utterly when he says, "Many of you . . . are missing a rare opportunity to experience great pleasure by being . . . remiss in accepting or fulfilling obligations and privileges offered by the various elected offices existing within your 'sectional' society of orthodontists. Sometimes the fulfillment of these duties entails the expenditure of some energy and the loss of a bit of profitable time. This is inconsequential in comparison with the potential rewards." Personally, I have found this to be very true, and although I may have devoted many hours and considerable energy to our profession in fields where I have been placed, I must concede that it has been little enough of a contribution to a profession which has given so much happiness to me. Francis Bacon really summed it up when he said in his *Maxims of the Law* near the beginning of the seventeenth century, "I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves, by way of amends to be a help and ornament thereunto."

To be elected to the presidency of our association is a great honor and here, within the bosom of my own Central Section, I confess that my acceptance of this assignment was coupled with an almost physical sense of inadequacy. May I say that now this has been supplanted by a feeling of humility, engendered perhaps by having looked back over the years of devoted effort on the part of so many illustrious predecessors. This is, however, accompanied by a resolute desire to attempt to live up to the responsibilities of the office and accept the challenge it offers.

It was a pleasure to present this contribution, and it will be a deeper and more lasting satisfaction if I may have been able to provide you with a keener realization that you belong to an organization which values highly your loyalty and support in trying to further its most worthy aims and purposes.

A TYPICAL VIEW OF EUROPEAN ORTHODONTICS

J. A. C. Duyzings, Utrecht, The Netherlands

IN THE first place I should like to thank you for the honor bestowed upon me with this invitation to read a paper and present table clinics before the American Association of Orthodontists.

This name has great significance to Europeans, and inspires us with a feeling of respect. America, which has been the leading force in dentistry, scientifically, practically, and technically, can boast of many orthodontists, men with great names, in the past as well as in the present.

Europe, too, has produced great investigators, who have tried to solve various essential problems, but in a slightly different way.

However, the differences between American and European approaches can never be completely divergent, since they all lead toward the same goal. This goal is the satisfactory end result of treatment.

For you, I am a European, of course, but first and foremost I am a Dutchman, hailing from the country of Her Majesty Queen Juliana, the country of Rembrandt, the country where the bulbs and wooden shoes come from.

As President of the Dutch Society for the Study of Orthodontics, I give you the kind regards of my Dutch colleagues, who appreciate a strengthening of the contacts with the American colleagues as highly as I do.

Furthermore, as vice-president of the European Orthodontic Society, I bring greetings from the Board of this Society, and we hope that the relations and contacts between these two large societies may flourish for the good of all children who can enjoy our common scientific studies, and practical and technical applications.

I will now give you an impression of the views held by my friends in various European countries.

It is not possible to report on the research done in the field of orthodontics in Europe because every country has two or more universities where dentistry is taught. The research done at each university is generally not known until the problem has been brought to a solution and presented at our meetings.

In the field of orthodontic scientific research, the Scandinavian countries, followed by Switzerland, rank highest. Interest and necessity go together here, in my opinion.

The high frequency of incidence of dental caries in Scandinavia has stimulated many investigators to explore the causes of caries. The orthodontic investigations into the deviations from the normal, resulting from this frequency of caries with its reduction and premature loss of the deciduous elements, did not lag behind.

Read before the American Association of Orthodontists, Louisville, Ky., April, 1951.

The serial extraction method of Dr. Kjellgren, Stockholm, the extraction of deciduous elements (Professor Hotz, Zürich), the germectomy, or removal of permanent teeth before they emerge (Duyzings) are based on the same principle: prevention of crowding by reducing tooth material if there is an excessive amount of it.

The main point, however, is that a great difference is observed in the views held by you and by us on the subject of therapy; the problem of *when,* as well as the problem of *how.*

Early treatment is no longer a problem for us, really. One must start with treatment as early as possible and also give advice to prevent anomalies of tooth position as early as possible.

There are also some differences in the appliances used. In Europe, orthodontic treatment is effected, if possible, by means of removable plates or simple removable arches. The frequent use of plates in Europe may be due to the following cause: in Norway, the Andresen method was used chiefly with children who were living in distant places and could come to see the dentist only once in six weeks or two months. Although the appliance is bulky, it is entirely harmless.

In England, where the children can visit the orthodontist only during the holidays from the public school, the plate becomes a very attractive solution.

Other arguments are that in Europe children show a certain dislike of bands on their front teeth, while the parents are afraid the children will get caries on the front teeth.

I am of the opinion that it is not necessary for me to talk about things on which there is a unanimity of opinion, but that we had better discuss the more or less principal differences.

Since we had the good fortune and the pleasure of having Dr. George Moore give a fortnight's course in Holland in 1948, and of having the opportunity of attending a course given by Dr. Clare Madden in 1950 on the twin wire appliance, a lecture by Dr. Margolis in 1949, and one by Dr. Karcher in 1950, together with a constant flow of American literature, we are informed, to a certain extent, as to the American ideas.

Dr. Strange, whom we met in St. Moritz, presented a report on the conditions obtaining in Europe.

One of the most characteristic facts is that we regard any child who is in need of orthodontic intervention as *an individual, with an individual pattern of growth.* The solution of a certain orthodontic case requires an individual treatment. We are well aware of the fact that statistics have presented us with a common divisor, but that these values do not apply to all cases from which this average has been derived.

Therefore, we have to be careful in the application of standards or standard forms of treatment to solve the individual problems which confront us.

I should like to tell you something of social orthodontics. In this connection I can discuss the conditions pertaining to Holland only. People with an annual income of hfl. 4,800, which can be compared with $3,000 in America,

are obliged to have health insurance; 70.8 per cent of the population is in this group. Dental care is included in this insurance. The patient pays a small amount for fillings and for complete dentures.

Orthodontic treatment is not included in this insurance, for it is regarded as "facial beautification." Orthodontic treatment of cleft palates and other pathologic developmental disturbances is provided for by the insurance. In 1950, negotiations were opened with the Social Health Insurance Boards on the problem of how to provide orthodontic treatment.

The dentists endeavor to convince the Boards of the necessity for permitting treatment of imminent or incipient orthodontic anomalies under the provisions of the Public Health Insurance. Threatened anomalies must be reduced by simple and inexpensive means. Many cases could be demonstrated in which excellent results have been obtained by simple appliances.

The present negotiations may have the result that only children from 5 to 8 years, at the most, can receive this orthodontic treatment (at least a great percentage of the children need such treatment).

The children older than 8 years must be regarded as being too old for this social orthodontic care, and treatment of these patients must be paid for in some other way.

In the Netherlands there is no orthodontic care organized by the Public Health Service. Many children without means are treated and only a small fee (fixed by the dentists together) has to be paid, but the orthodontist is completely in charge, and in view of the incalculable factor of the duration of orthodontic treatment, he will continue to do so for the time being.

In Amsterdam an outpatient clinic has been organized and is operated under the supervision of our colleagues, Nord and Koenen. Twenty-five hundred children are treated per annum by four part-time workers. Plate appliances of every possible description are used.

In Brussels, is an outpatient clinic, managed by Dr. Lucien de Coster, where some 4,000 children are treated per annum by means of very simple lingual appliances. Thus the possibility is created of providing many children with orthodontic treatment.

Social help in orthodontics is started in Europe, and I think, even if I do not like it, we cannot keep it back. In the United States I think it will start sometime, and therefore it will be a good thing to have a joint meeting of the Americans and Europeans as to how we can bring this evolution about gradually.

It stands to reason that no appliances can be used that require a lot of time for their preparation and that break easily, thus giving a lot of trouble. Therefore, plate appliances are used, since they are easily made and easily altered, while the results are very good.

I told you already that the orthodontists suggested the Public Health Insurance should treat the children from 5 to 8 years of age. This implies that the Dutch orthodontists recognize early treatment as an accomplished fact. I, for one, start treatment with the toddlers if possible. A great number, *if not all*, of the orthodontic anomalies which one finds in the permanent dentition *as a*

result of faulty jaw relationships are already established in the deciduous dentition. The only logical plan is, in my opinion at least, to alter these faulty relationships into a correct one at this very moment. Our goal is to guide unsatisfactory developmental tendencies in the right direction.

I shall try now to explain why orthodontists in Europe consider early treatment in orthodontics most desirable in connection with facts known concerning the development of the skull in general and the face and masticatory components in particular.

In this I shall have the opportunity to go into some deviations, which, in my opinion, give an indication for early intervention.

My studies on the process of the baby's drinking from its mother's breast have convinced me of the great influence of the function of the tongue and the lower jaw in the process of drinking. Deviations from the physiological process, such as occur in bottle-feeding, and certainly the abnormal physiological forces due to thumb-sucking, finger-sucking, palm-sucking, lip-sucking, and tongue-chewing may give rise to considerable anomalies before the child is 6 months old.

Many imminent deviations from the normal can be prevented or reduced by giving advice to the parents of these babies. The anatomical data, the physiological conditions, the function, the tendency, and the potency of growth will ultimately determine the shape of skull and face.

We possess knowledge regarding the process of growth in general, but our knowledge of the individual process of growth is scanty, unfortunately, as we do not know the number of determinants nor their interrelationships, since they are greatly variable, due to hereditary factors.

The anatomical-morphologic facts, with hereditary developmental tendencies, combined with physiological functions, give by the growing process from newborn to adult a harmonious anatomical functional balance at last.

The biologic conception of *growth* of a part of the body, an organ or an organism, is a succession of changes of proportions, usually with an increase in dimensions.

Growing processes can be described by composing a graph in which on the one side are mentioned certain points of time and on the other side certain positions of a growing organism, organ, or parts of it and expressed in length, width, depth, height, mass, volume, weight, or another measurable quantity.

The time of growth of different organs is not always the same, whereas among the organs mutual differences occur so far as the points of time of fast or slow growth are concerned.

Functional, mechanical, nutritive, nervous, and hormonal factors play a part here.

Growth intensity, growth potency, form, and function as one entire correlation will be observed as the growth pattern.

Shape and function are the perceptible, eventually measurable quantities, growth tendency and potency the immeasurable ones.

Among other things we know that if one of these factors changes, for instance the function, the shape can change too.

It is only possible to state approximately what will be the ultimate outcome of the growth. It is never possible to state with mathematical certainty—this is meeting the eye, *that* it will grow to be.

Knowledge of the general processes of growth, observation of irregularities in the individual process of growth of the skull, the face, alveolar processes, dental organs, and the overlying soft parts is a prerequisite for the orthodontist.

In the course of the growth of the base of the skull the angle between the anterior and the posterior parts changes. Growth of the sphenoid bone may influence an orthognathic facial development or a face with deep bite, although the anatomical form of the maxillary bone is not necessarily altered. Is it possible for us to modify these circumstances by applying or eliminating intraoral forces? Such questions urge themselves upon us whenever we try to form a clear idea of those peculiar alterations which present themselves in the particular growth pattern to the close observer.

Orthodontic science should be firmly founded on this dynamic developmental process.

Twin research, especially that of uniovular twins, has supplied us with great possibilities. In biovular twins the identical development is present to a much lesser extent; sometimes it is even completely divergent. Therefore these studies on twins have given us some insight in genetic and environmental influences on growth.

In addition, examination of children from large families is of more scientific and practical significance to these important studies. Entirely different types of children are to be found among siblings who, though having a great deal in common, are entirely different regarding their physique and their appearance.

Comparisons of cranium and facial bones and teeth, appearance, and intellect teach us that the hereditary factors are present, but develop in an entirely different direction due to environmental circumstances. The latter may be of an exogenous or endogenous nature. As a rule, only the exogenous ones can be changed or replaced by us, for instance, the physiological mechanical function of the mouth, the lips, the cheeks, the jaws, the tongue, the palate, the muscles of the floor of the mouth, and the nasal air passages.

Every individual has hereditary factors. However, two siblings of the same parents do not have the same factors. Only a few of the highly varied possibilities of the hereditary factors of the ancestors will visibly manifest themselves.

The skull of the adult is not a mere enlargement of the skull of the newborn. Every bone, or even its parts, possesses a potency of growth of its own, but it is on the other hand part of the total and it cannot escape influences originating from this total.

The anatomical relationships are supported in their correct development by physiological influences. If normal physiological factors cease to be present or if nonphysiological factors come into existence, the anatomical equi-

librium (= harmony) can be disturbed. Unsatisfactory anatomical relationships can be increased by normal physiological influences. If disharmonious anatomical relationships are submitted to the influence of unsatisfactory factors, it is obvious that a markedly excessive deviation from the norm will appear. An example of such adverse parallel action is, for instance, the influence of thumb-sucking on leptoprosopes, or narrow-faced individuals.

In order to detect and correct incipient deviations from the normal one must know and examine the normal anatomical and physiological relationships of each developmental stage as well as their interrelationships.

Many people still regard it as something strange that the field of activity of the orthodontist is at the cradle of the baby. Yet *there* the potentialities for the future can be found. Millimeter anomalies in this period will grow to be centimeter ones, later on.

In babyhood no orthodontic treatment can be given. Our task consists of advice, with the prevention of anomalies in mind. This is better than having to correct marked deviations from the normal by means of complicated appliances and a great deal of strenuous work. One ounce of prevention is better than one pound of cure.

It has taken a great deal of work to convince people that good dentistry begins with the prevention of caries.

If a jaw is to develop harmoniously, the formative mechanisms of jaw and teeth will have to run a parallel course and take place simultaneously. A disharmony between bone and dental development may give rise to many dental anomalies.

The natural development of the living organism is the greatest of miracles. The meaning and the purpose of that development is as extensive an adaptation as is possible of the organism to the requirements of life. This aim is pursued with extreme care. The organism grows and completes itself as it is alive and functioning. An organism will develop according to its function.

This development is both qualitative and quantitative. The organism is tuned in to the goal, the function it has to perform, and it responds to impressions and stimuli. Mild or moderate stimuli, gradual stimulation, result in a normal development and function. These stimuli, the functional stimuli, contribute toward the growth and perfection and increase its formative power.

No stimulus, however, touches but one organ exclusively; it always affects the whole organism. Muscular exertion, consumption, and effort are correlated and there is an interplay. The organism is a large unit, which is kept in the right channels by the supremacy of the central nervous system.

It is a well-known fact that the influence of stimuli on a young, growing organism is greater than that on a full-grown one. The more intensive the growth of an organism, the more susceptible it is to the influence of stimuli. Not only is the child not a minute adult, he is entirely different, he lives in accordance with his peculiar nature and he must be treated accordingly. He does not only distinguish himself by his minute dimensions, but also *primarily* by his susceptibility to stimuli. Brief, often recurring, stimuli of medium intensity stimulate the growth.

The growing organism has less resistance against external influences. Rapidly growing tissues are more easily affected by external stimuli and events. The same applies to the functional adaptation of the bone system. The jaw system as part of the complicated facial skeleton is composed of many bony parts and possesses a functional form and structure.

In the newborn, the anatomy of the chewing musculature is built so as to effect a forward displacement of the lower jaw and to keep it there during the process of drinking. The lower jaw performs elliptical movements during the process of drinking. In older age, groups of muscles have such a function as to permit the jaw moving up and down, opening and closing. In the newborn, the muscles effecting a forward displacement of the jaw are much more developed, comparatively, than the muscles that move the jaw up and down. In older children it is exactly the reverse.

The anatomy of the oral cavity of the newborn greatly differs from the adult oral cavity. There is no processus alveolaris mandibulae as yet and consequently there is no distinct separation between the vestibulum oris and the cavum oris proprium. In consequence, the tongue of the newborn takes up more space in the oral cavity than it does in the adult. Its edge is situated between the processes of upper and lower jaws, the tip of the tongue lies directly behind the lips, sometimes even in the rima oris. In babyhood the tongue is relatively larger than later on. It is thicker, broader, and shorter. The growth of the alveolar processes of upper and lower jaws greatly affects the definitive position.

Because of its size, the tongue brings pressure to bear upon the tissues of the jaw. From the outside the cheeks and lips, being elastic tissues, exert counterpressure. If these two powers are rightly balanced, a harmonious growth of the alveolar process, which contains the dental germs, will be promoted.

In the period during which the alveolar processes come into existence and the incisors erupt, the tongue is forced to draw back and the tip of the tongue takes up a position more posteriorly, against the hard palate. Thus the alveolar process develops between two elastic tissues, the tongue on the one hand and the cheeks and lips on the other hand. If the equilibrium is disturbed, this disturbance will not fail to show its effect.

When drinking, the baby grasps, with his lips, the nipple and the areola. The tongue is put out across the lower lip and grasps the lower part of the nipple like a spoon. The upper part of the nipple and a part of the areola are situated against the palate between the lateral proliferations of the mucosa present there. The bony base of the lower jaw supports the tongue that is lying across it, and thus it constitutes part of the source of power producing the pressure of the tongue against the nipple and the palate, which experiences an expanding influence.

The form and consistency of the mother's breast can be of influence on the drinking process, at least, on the position of the lower jaw of the baby.

Respiration, normal nasal respiration, also affects the development of the oral cavity by means of pressure on the palate, which results from the vacuum

in the oral cavity. The closed lips have a marked influence on the normal site of the lower jaw.

In babies who are breathing very intensively through their noses while the mouth is closed, the lower lip is sometimes sucked inward. This pressure, too, may have its effects.

In the habitual mouth breathers we miss these two very important factors. Mouth breathing indirectly acts on the development of the dental arches, the formation of the nasopharynx, the thorax, and the lungs. This may result in a lack of development of the muscles, the bones of the nose and of the jaws, and a greatly insufficient function of the lips, cheeks, and tongue. The latter influences the jaws and dental arches and thus the vicious circle is completed.

The position of the hyoid bone is determined by the development of many muscles, such as the digastric, the stylohyoid, the geniohyoid, the hyoglossus, and the mylohyoid on the one hand and the omohyoid, the sternothyroid, and the thyrohyoid on the other hand.

The former group develops in a normal way if the mouth is closed (function). In a mouth breather the tongue sags. In consequence thereof the tongue pressure in upper and lower jaws is altered and increases its effect on the lower jaw.

If a number of bad habits are added, a correlated complex of deviations from the normal comes into existence. Thumb-sucking, for instance, may result in a compression of the upper and a withdrawal of the lower jaw. The dorsal displacement of the tongue causes a tilting of the hyoid. Not only the formation of the bony nasal cavity is hampered and disturbed, but also the pharyngonasal cavity cannot develop harmoniously either.

Normal breast-feeding, variation in the position of the baby in his cradle, normal nasal breathing, and no boredom of the baby are all factors that are important to the development of the face.

Let us follow in short the growth of the jaws. The upper jaw of the newborn is grown together out of *3* parts, the os intermaxilla and 2 sagittal parts. There are no teeth and no alveolar process.

The jaw of the adult is composed of *5* parts: The frontal part with the incisors; the two sagittal parts, the original bony parts belonging to the deciduous dentition, bearing later on the cuspid and both premolars; and the two sagittal parts which grow, later on bearing the M_1, M_2, and M_3. These five parts anatomically ought to finally form a harmonious whole.

In the first year of life the deciduous teeth are growing at the same time with the alveolar process.

The correct physiological forces that are present at *this period result in a good placing of the jaws, a harmonious growth of the alveolar process, and a balanced occlusion.*

When we break the physiological play of forces in *this* period, the basis for a wrong relation of the jaws, a wrong development of the alveolar process, malocclusion and malposition of the teeth is established. This break of the physiological play of forces happens with every force that is made from the

outside by habits committed at the mouth. The size, the direction, the intensity, as well as the length of time of these forces will influence the extent of the deformation that is brought about.

In the thirtieth month the deciduous dentition has completely erupted, but this stability does not continue to exist for a long time. Soon the physiological diastemata are bound to arise. The diastema behind the deciduous cuspid is of special importance. Everybody can observe these physiological diastemata.

If physiological diastemata fail to appear at the age of 4½ or 5, we see all kinds of anomalies make their appearance. Expansion of the jaws at that age will prevent a great deal of trouble afterward. I know the view held by some, that it is not always necessary to expand in this period. A simple x-ray reveals the relationship between the size of the permanent and the deciduous elements. By means of expansion we increase the space available for the permanent elements. The present dormant forces of growth are stimulated to activity at an earlier date. This expansion is not dangerous, for I have never observed in a later stage a new physiological transverse growth.

The position of the deciduous cuspid is of great importance. Its position ascertains whether it can be expanded or not. In this respect its position is much more important than the first permanent molar.

Now I should like to draw attention to another fact in the physiological growth, the natural transverse development of the alveolar processes, belonging to the deciduous dentition in relation to the position of the first molar.

At the age of 6 the first molar takes its place in the growing bony parts after the deciduous teeth-arch bone-construction which on *that* certain moment has to be in harmony with the state of development of the other parts of the skull and face.

A disharmony of the part of the jaw that belongs to the deciduous dentition, and the growing bony part that belongs to the first molar as a part of the later bone construction of the regio molares of the permanent dentition, means a further disharmonious growth of the jaws.

A malposition of the permanent teeth, as C, P_1, P_2, should result. We should bring these parts in harmony as early as possible.

In case the bony parts, belonging to the deciduous dentition, are transformed by exogenous factors, respectively bent too much to the front in the frontal part and the sagittal parts compressed by muscular action, then the growing bony parts also will come too much to the front and apparently also too much buccally. The first molar will develop into a position which is placed too much to the front.

Various endogenous factors may be underlying this process:

1. Influence of the growth center or centers of the os incisivum
2. Growth factors of the alveolar processes
3. Developmental factors of the dental germs
4. Growth factors of the maxillary bone.

This deviation from the normal is easy to recognize. We have every reason to regard this irregularity in the physiological growth as a characteristic of the lagging behind of the alveolar process of the deciduous dentition regarding transverse growth as compared with the complementary permanent dentition.

These are as easy to diagnose as is the failure of physiological diastemata to appear in the frontal area.

With the eruption of the first permanent molar, usually in the early part of the sixth year of life, we often notice that this molar does not adjust itself posteriorly in this arch of the deciduous dentition, but is directed more buccally.

The arch of the deciduous dental system and its base, the alveolar process, has a horseshoe shape, to a greater or lesser extent, in the upper jaw. In a great many cases the first permanent molar erupts more buccally behind this arch. It would appear, then, as if the two deciduous molars were situated too far palatally, respectively lingually, the first permanent molar too far buccally.

Actually, however, the situation is entirely different from what it would appear to be at first sight, *for the first permanent molars are correctly placed in relation to the development of the whole of the facial skeleton,* whereas the expansion in transverse direction, which should be attendant upon it and runs a parallel course of the bony part belonging to the deciduous dental arch, has failed to appear. Thus one might say that the physiological widening of the maxillary arch at the site of the deciduous molars has failed to appear.

The importance of recognizing this disturbance early lies in the fact that here we may find an explanation for the frequently occurring compression in the permanent dentition at the site of the premolars.

Furthermore, we should be struck by the fact that M_2 and M_3 establish a harmonious relation with the first molar, in the course of this development. This would suggest that the developmental process of the regio molares of the permanent dentition is closely correlated with the development of the other facial bones.

If we find in such cases that the development of the bony parts, belonging to the deciduous dentition, has not kept pace with that of the growing part of the jaws, resulting in the symptom of a more buccal position of the first molar, we must apply means to restore the harmony of the arch of the deciduous dentition and the position of the first molar as soon as possible.

The factors that may lead to this nonphysiological development are as follows:

As has been remarked before, the first molar usually erupts at the right, or almost the right, site in harmony with the development of the bony parts of the facial skeleton. Furthermore, there is the insufficient growth of the bony parts belonging to the deciduous dentition, in transverse direction.

In the period of the deciduous dentition, at the age from 4 to 7 years, we meet with a marked development of the masseter muscles.

If, at the same time, the pressure of the tongue in the upper jaw disappears, the greatly increasing mass and function of the masseter will undoubt-

outside by habits committed at the mouth. The size, the direction, the intensity, as well as the length of time of these forces will influence the extent of the deformation that is brought about.

In the thirtieth month the deciduous dentition has completely erupted, but this stability does not continue to exist for a long time. Soon the physiological diastemata are bound to arise. The diastema behind the deciduous cuspid is of special importance. Everybody can observe these physiological diastemata.

If physiological diastemata fail to appear at the age of 4½ or 5, we see all kinds of anomalies make their appearance. Expansion of the jaws at that age will prevent a great deal of trouble afterward. I know the view held by some, that it is not always necessary to expand in this period. A simple x-ray reveals the relationship between the size of the permanent and the deciduous elements. By means of expansion we increase the space available for the permanent elements. The present dormant forces of growth are stimulated to activity at an earlier date. This expansion is not dangerous, for I have never observed in a later stage a new physiological transverse growth.

The position of the deciduous cuspid is of great importance. Its position ascertains whether it can be expanded or not. In this respect its position is much more important than the first permanent molar.

Now I should like to draw attention to another fact in the physiological growth, the natural transverse development of the alveolar processes, belonging to the deciduous dentition in relation to the position of the first molar.

At the age of 6 the first molar takes its place in the growing bony parts after the deciduous teeth-arch bone-construction which on *that* certain moment has to be in harmony with the state of development of the other parts of the skull and face.

A disharmony of the part of the jaw that belongs to the deciduous dentition, and the growing bony part that belongs to the first molar as a part of the later bone construction of the regio molares of the permanent dentition, means a further disharmonious growth of the jaws.

A malposition of the permanent teeth, as C, P_1, P_2, should result. We should bring these parts in harmony as early as possible.

In case the bony parts, belonging to the deciduous dentition, are transformed by exogenous factors, respectively bent too much to the front in the frontal part and the sagittal parts compressed by muscular action, then the growing bony parts also will come too much to the front and apparently also too much buccally. The first molar will develop into a position which is placed too much to the front.

Various endogenous factors may be underlying this process:

1. Influence of the growth center or centers of the os incisivum
2. Growth factors of the alveolar processes
3. Developmental factors of the dental germs
4. Growth factors of the maxillary bone.

This deviation from the normal is easy to recognize. We have every reason to regard this irregularity in the physiological growth as a characteristic of the lagging behind of the alveolar process of the deciduous dentition regarding transverse growth as compared with the complementary permanent dentition.

These are as easy to diagnose as is the failure of physiological diastemata to appear in the frontal area.

With the eruption of the first permanent molar, usually in the early part of the sixth year of life, we often notice that this molar does not adjust itself posteriorly in this arch of the deciduous dentition, but is directed more buccally.

The arch of the deciduous dental system and its base, the alveolar process, has a horseshoe shape, to a greater or lesser extent, in the upper jaw. In a great many cases the first permanent molar erupts more buccally behind this arch. It would appear, then, as if the two deciduous molars were situated too far palatally, respectively lingually, the first permanent molar too far buccally.

Actually, however, the situation is entirely different from what it would appear to be at first sight, *for the first permanent molars are correctly placed in relation to the development of the whole of the facial skeleton*, whereas the expansion in transverse direction, which should be attendant upon it and runs a parallel course of the bony part belonging to the deciduous dental arch, has failed to appear. Thus one might say that the physiological widening of the maxillary arch at the site of the deciduous molars has failed to appear.

The importance of recognizing this disturbance early lies in the fact that here we may find an explanation for the frequently occurring compression in the permanent dentition at the site of the premolars.

Furthermore, we should be struck by the fact that M_2 and M_3 establish a harmonious relation with the first molar, in the course of this development. This would suggest that the developmental process of the regio molares of the permanent dentition is closely correlated with the development of the other facial bones.

If we find in such cases that the development of the bony parts, belonging to the deciduous dentition, has not kept pace with that of the growing part of the jaws, resulting in the symptom of a more buccal position of the first molar, we must apply means to restore the harmony of the arch of the deciduous dentition and the position of the first molar as soon as possible.

The factors that may lead to this nonphysiological development are as follows:

As has been remarked before, the first molar usually erupts at the right, or almost the right, site in harmony with the development of the bony parts of the facial skeleton. Furthermore, there is the insufficient growth of the bony parts belonging to the deciduous dentition, in transverse direction.

In the period of the deciduous dentition, at the age from 4 to 7 years, we meet with a marked development of the masseter muscles.

If, at the same time, the pressure of the tongue in the upper jaw disappears, the greatly increasing mass and function of the masseter will undoubt-

edly be able to cause a compression of the part of the jaw concerned in spite of the growth potency of the maxillary tissue.

The transverse growth is inhibited, especially that of the alveolar process which carries the deciduous teeth and harbors the germs of the successors. In the therapeutic interventions this process can be easily made to occupy the right place by means of expansion. If this correction is not carried out, unfavorable consequences will not fail to occur.

The distal surface of the second deciduous molar in the upper jaw is usually flat or slightly curved; this plane does not constitute a right angle with the longitudinal axis of the dental arch. The mesial surface of the first permanent molar is flat. These two elements slide alongside of each other under the influence of the mesial tendency of M_1. The M_1 presents a buccal and mesial displacement, the M_2, a palatal one. The teeth and the lower jaw usually adapt themselves by occlusion.

This insight leads us to our next subject.

EXTRACTION IN ORTHODONTICS

It is a well-known fact that the first molar does not always attain the same spot nor remain there, in relation to the other points of the face.

It is possible to tip the crown of this first molar distally by means of appliances and much painstaking work.

It is a painstaking process, because it is so much at variance with the physiological processes of growth. The development of jaws and teeth and the face itself takes a place in anterior direction. Therefore the distal displacement of the first molar, which is unnatural, may be possible, but it is surely painstaking. The other elements have to follow too.

A first molar in a good Class II relationship does not necessarily hamper a good articulation and mastication.

The space that is available for the elements C, P_1, and P_2 in a Class II relationship of the molars may turn out not to be sufficient. Whether a P_1 or a P_2 will have to be sacrificed depends upon where and how the dental germs are lying, which element is the first to appear, in which place and in which relation to the elements of the lower jaw.

The many investigations and applications of Professor Hotz (Zürich), Dr. Birger Kjellgren (Stockholm) (serial extraction), Dr. Nord (Amsterdam), and me have led us to extract a deciduous element beforehand, if deviations from the normal are imminent, in order to place the successors in a harmonious position. Roentgenograms reveal far too often that the developing permanent element resorbs the mesial root or the distal root of the deciduous element only. In the normal physiological disappearance of the deciduous elements the developmental forces of the M_2 with the development of the bony parts that belong to it will push the M_1 forward.

In the purposeful and well-considered extraction of deciduous elements, roentgenograms are necessary to determine the place of the permanent elements. Whether it is desirable to displace the M_1 will be of decisive importance in the indication for extraction of deciduous elements.

The direction of eruption, the size and width of the developing permanent element, together with the direction of the axis of the M_1 and the developmental status of M_2 and M_3 are the decisive factors.

The processes which take place in the development of the face, especially the alveolar process, notably that of the upper jaw, can be influenced by us. Transformation of the alveolar process by modifying the factors that determine the development is possible. Thus it will be permissible in some cases to eliminate forces (or to modify them) that belong to the development of a dental element.

On the one hand this may be necessary because the dental material is too large, relatively, for the jaw; on the other hand the jaw material may be relatively too small for the teeth.

I hope you will not misunderstand me. We only proceed to extract after careful consideration.

The place where the first molar will come in the beginning and its ultimate position are very important, therefore. This position will depend upon a great many dynamic developmental phenomena of the dental system in the developing alveolar process. Therefore we must be on the alert and closely observe what is happening or bound to happen in these dynamic processes.

In the thirteenth or fourteenth year these growth processes have almost come to an end. Then we can speak only of dental displacements. I have emphasized over and over again: begin at the beginning; begin with your observations at the cradle. Start giving advice there. The number of children who are coming to me in my private practice for orthodontic help, and whom I have personally interrogated, are about 500 in 1949 and another 500 in 1950. Eighty-one per cent of these children performed a habit at the mouth as a baby or toddler.

If one allows bad habits to continue, the site of the first molar will also be affected.

If, knowing this, one allows this process to continue, nevertheless, and if one is blind to consequences, it is contradictory, in my opinion, to change this developmental tendency at so late a stage. The bony construction surrounding the molars and teeth is consolidated then, which is also partly due to the function.

A clear illustration may be presented here. When, as a young boy, building a tower with a Meccano set we place and fix many strips in a logical arrangement (nuts, hinges, joints); this complex becomes a firm construction, well balanced and durable. It can be compared with the normal construction of the bones of the face.

What will happen if I am building carelessly and out of plumb and when I have finished, see that the top is far away from the point of support and then try to force everything into the right position? That would be very illogical, would it not?

I will compare this procedure with the development of bone under the influence of persisting, exogenous foreign forces, which are attendant upon the bad habits, for instance. One should bear in mind that these small construction strips become increasingly more solid of their own accord and lose their

pliability. Therefore, I will emphasize again: Begin at the beginning. See to it that all components can develop in a harmonious relationship.

In the textbooks of embryology we may learn about the processes of prenatal development, how a human individual arises from a single fertilized ovum.

The knowledge of embryology is of importance, because it affords an insight into the various possibilities which are present in essence and which will present themselves to us later on as accomplished facts. During the prenatal development it will not be possible for us to interfere mechanically.

In the period from birth to about the seventh month physiological processes take place which are not encountered later on, for instance, the process of feeding at the mother's breast. The combined action of the many varied physiological forces has a great influence on the harmonious development of the face.

In this play of forces we can interfere postnatally, and the earlier we do so, the more easily and rapidly the ultimate result will be attained and the greater our chance of obtaining a permanent success.

I have endeavored to provide you with a brief view of the opinions held by my friends in the European Orthodontic Society in various countries; they treat their cases generally in accordance with the considerations just presented.

SUMMARY

Owing to the knowledge in the process of growth of face and skull, we, in Europe, have come to recognize that it is necessary to give advice as early as possible in order to prevent orthodontic deviations from normal.

If deviations from the normal manifest themselves, our view is: treat as soon as possible.

We do this in Europe in a way that is justified from the social point of view, by means of various simple appliances.

May I introduce as my personal opinion that next to scientific knowledge, the orthodontist has to know all artistic characteristic nuances of the human face and also the value of them. In some cases the construction of the face, differing from the normal type but being harmonious, will turn the scale rather than scientific views. Here I have in mind the place the nose takes up in the face with a maxillary protrusion. If, in such a case, the teeth are brought distally, the nose still remains in the same place. In this way a pronounced factor has been brought about. This certainly can be established from cephalometric x-rays. Cephalometrics, however, is only one of the many factors from which diagnosis and therapeutics are established.

A good view and good observations are very important factors.

Therefore I may quote here the English writer Ruskin who says:

> The greatest thing a human soul ever does in this world is to *see* something, and tell what it *saw* in a plain way. Hundreds of people can talk for one who can think, but thousands can think for one who can see. To see clearly is poetry, prophecy, and religion, all in one.

19 HAMBURGERSTRAAT.

CLEFT PALATE

Report of a Case

Herbert D. Jaynes, D.D.S., Atlanta, Ga.

THE patient, C. B., was a white girl, 21 years of age, March, 1948.

Diagnosis.—The patient presented Class I (Angle) malocclusion, a direct result of complete cleft of both hard and soft palates and lip on the left side, both palates and lip having been successfully closed by surgery. The mandible could be considered of normal size, development, and position. Intraoral radiographs revealed all teeth present in the mandibular arch with both third molars mesioangular impactions; left maxillary first premolar and lateral incisor and right canine were congenitally missing. Only root of left maxillary central incisor remained in the cleft. Intraoral radiographs also revealed acceptable calcification of teeth and supporting alveolar bone, and absence of periodontal and periapical disturbance. This case exemplified the most typical cleft palate maxillary arch form and tooth malpositions, that is, the arch was *V*-shaped with apex forward; maxillary left canine and first premolar and right central and lateral incisors were in complete linguoversion. The maxillary left second molar was in complete buccoversion.

History and General Clinical Picture.—General physical development was good. There was no history of general illness throughout life other than mild childhood diseases: measles at 7 years, whooping cough at 10 years; otherwise she had always enjoyed good health. She had cod-liver oil and plenty of fresh orange juice as a child. She always had milk in sufficient quantity. Mental health was good and she had ambitions and outlook of a normal 21-year-old girl. Mother had normal palate but cleft of lip on the same side as the patient (left). As far as the patient knew there was no other cleft lip or cleft palate in the family. The lip was closed in infancy. The palate was closed at 18 years of age; however, previous unsuccessful attempts at closure had been made in early childhood. Speech defect was typical but not as marked as one would expect with such a severe deformity. The good quality of speech was due, I am sure, to her determination and the fact that she had taken speech correction at Florida State University and the University of Michigan. There was severe underdevelopment of the anterior segment of the maxillary arch and tight upper lip due to the presence of scar tissue, giving the typical dish-faced appearance. Caries was very mild. We had no knowledge of the occlusion of either parent and, as she was an only child, no sibling comparison could be made.

Read before the Southern Society of Orthodontists, White Sulphur Springs, W. Va., July 29, 30, 31, and Aug. 1, 1951.

Etiology.—The etiology was unknown. Possibly heredity played some part; as previously stated, the mother had cleft of the lip on the same side as the patient. Micrognathia, *V*-shaped maxillary arch, and linguoversion of maxillary teeth due to muscle pressure collapsing the arch into the cleft were present.

A. GENERAL PLAN

Plan of Treatment.—The first step in planning treatment procedure was a Kesling setup to appraise the possibility of the case and to determine what teeth could be utilized and what teeth would have to be removed to accomplish the best results. Study of the setup suggested the following procedures:

I. Rotation of the entire left maxillary buccal segment buccally, just as one would open a gate.

II. Labial movement of maxillary anterior teeth on the right side.

III. Reduction of tooth structure in the mandibular arch to assist in harmonizing the size of the two arches. The removal of the two mandibular first premolars would have been the procedure of choice, but due to the disto-axial inclination of the canines, this procedure was decided against and the left central incisor was removed instead.

IV. Removal of the root of the left maxillary central incisor.

V. Removal of the left maxillary second molar. This tooth was in complete buccoversion and the position of the unerupted third molar was such that it would have prevented the lingual movement of the second molar. Since the third molar was in good position and had a well-formed crown, it was decided the procedure of choice would be removing the second molar and allowing the third molar to erupt.

VI. Insertion of retaining plate, replacing maxillary left central and lateral incisors as well as the lost tissue in the cleft.

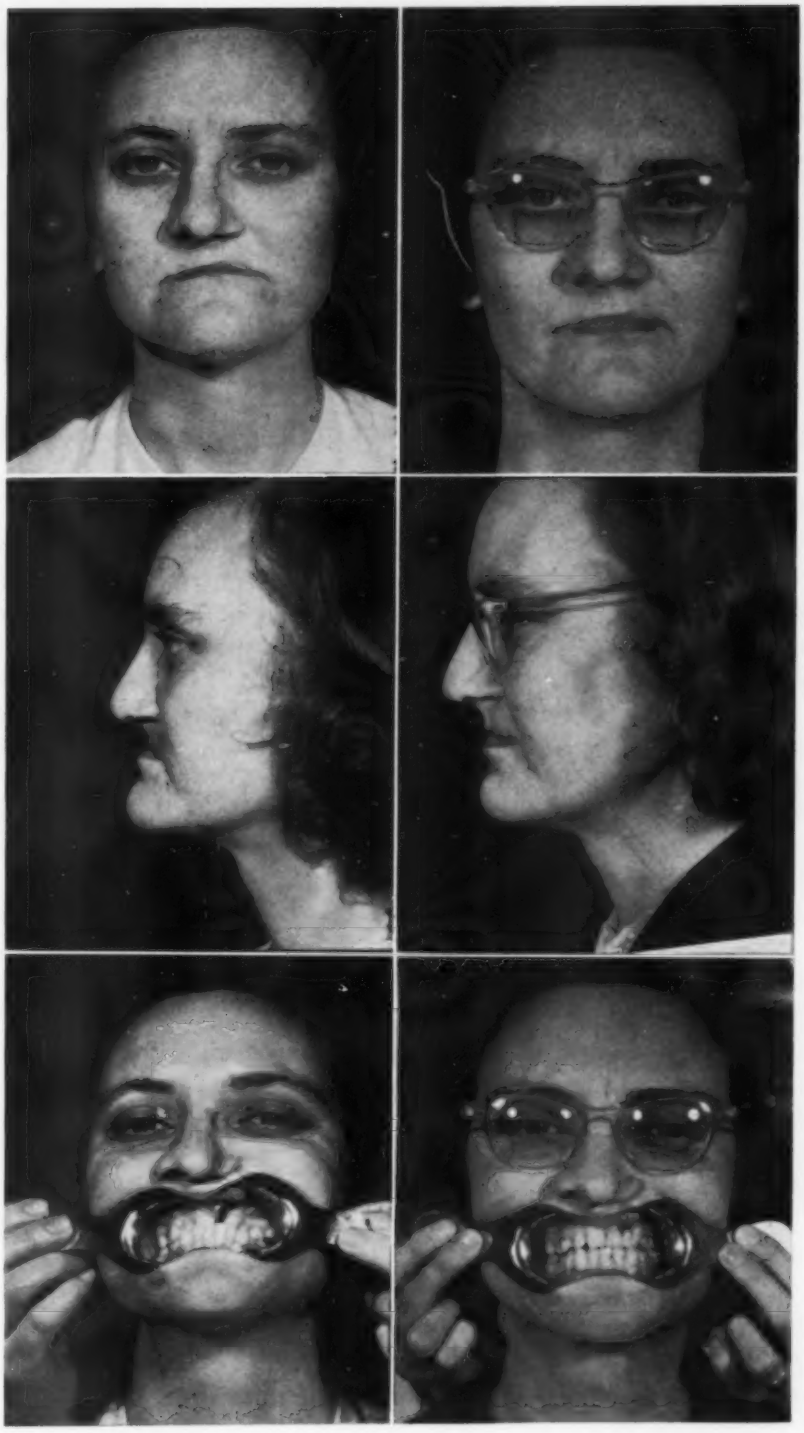
B. APPLIANCES USED

The maxillary appliances consisted of plain labial arch and a lingual extension on the side of the cleft. In the later stage of treatment, edgewise bands were used on anterior teeth in conjunction with 0.020 anterior segment in the labial arch. Mandibular appliance consisted of lingual arch and twin arch. Class III elastics were also employed.

C. SUPPLEMENTAL THERAPY

No supplemental therapy other than that prescribed by the family physician was used.

Progress of Case.—Since this was an out-of-state patient, appointments were kept to a minimum. After the preliminary work was completed she was seen at four-week intervals for approximately twenty-four months, for active treatment to establish the tooth arrangement worked out in the Kesling setup. This young lady gave full cooperation and there were no complications of any kind.



A. *B.*

Fig. 1.—*A*, Taken March 27, 1948; *B*, taken Dec. 16, 1950.

Secondary Treatment.—After primary treatment a maxillary plate was inserted carrying left central and lateral incisors and filling in the cleft on the labial surface under the left nostril.

Results Achieved.—There was great improvement in the appearance of the denture as well as facial balance. A much better functional relationship was established and it appeared the result was to be considered satisfactory. The patient was happier, more self-confident of her place in society, and had acquired a nice position.

Observations and Conclusions.—It has been our experience in orthodontic treatment of patients with cleft palate that the Kesling setup is invaluable in arriving at a plan of treatment. It appears that the buccal segment on the side of the cleft is rotated buccally much as one would open a gate, widening the cleft in the hard palate. This does not disturb the soft tissue closure and seems to be a safe procedure.

Post-treatment Findings.—Record photographs and casts, as well as post-treatment radiographs, were made. No evidence of periodontal disturbance or root resorption was noted in post-treatment radiographs. Surgery on the lip to smooth out mucous surface on the undersurface of the upper lip, and raise left ala of the nose, was advised. The patient wanted surgery done on the lip at the time she presented for treatment but we thought it wise to defer this until after orthodontic treatment. After treatment, the new arrangement of the maxillary teeth gives the plastic surgeon something to mold the lip over. Teeth were firm and stable in their new position. Soft tissue was normal. Speech defect had improved.

EDITORIAL NOTE

Of interest to the readers of the JOURNAL will be the following account of "The Victor Club" by Arthur J. Burks.

Dr. Herbert K. Cooper, an orthodontist of Lancaster, Pa., has for many years interested himself in the treatment of handicapped children.—*Ed.*

THE VICTOR CLUB

ARTHUR J. BURKS, PARADISE, LANCASTER COUNTY, PA.

ONE of the least known, or least noted, of congenital handicaps is cleft palate and/or cleft lip. Approximate research indicates that one live child in every 750 born around the world has either a cleft palate, cleft lip, or both. That means that there are in the neighborhood of 200,000 of these cripples in the United States. It is almost impossible for a man or woman to go through life without meeting one or more of these unfortunates. What effect do they have on their associates? They cannot talk comprehensibly, are inhibited—understandably—resentful, desperate, often antisocial. Investigation during the past twelve years by the Lancaster Cleft Palate Clinic, of which Dr. Herbert K. Cooper is founder and director, proves that many whom family, friends, schoolmates, associates, and neighbors regard as moronic are actually of superior intelligence. Most, however, would rather take zero for effort in school than expose themselves to the snickers of unconsciously cruel schoolmates who cannot understand their attempts at speech, yet are inclined to mimic them.

Dr. Cooper, with a few pioneering associates, has restored several hundred of these unfortunates to more or less normalcy. Their problem is primarily dental, and any dentist, working along the lines in which Cooper and his associates have paved the way, can assist at reclaiming and rehabilitating cleft palate persons within reach. Any army 200,000 strong is worth reclaiming.

The Victor Club, founded by Dr. Cooper, is proof of what can be done. This club consists of "graduates" of the Lancaster Cleft Palate Clinic, which means that they have been supplied with speech appliances which take the place of what Nature left out of their mouths; have been speech-retrained, have perhaps undergone surgery; above all that they have been emotionally and spiritually assisted to normalcy.

For the Lancaster Cleft Palate Clinic *treats the whole person, including his background.* That means it "works on" self-pitying parents, teachers, associates, schoolmates, who have "suffered" because compelled to be "burdened" with the cripples. Many mothers begin by saying, "Doctor, you don't know how I've suffered with this child," but they seldom get any further with Dr. Cooper and his associates. They are also treated where they most need it, spiritually.

The Victor Club consists of men and women who, before treatment, could not even ask for jobs, who were in some cases aggressively antisocial, but who

are now *lecturers, singers, lawyers, dental hygienists, speech consultants, traveling salesmen, child psychologists,* and other hitherto unattainable professional "victors."

Every Victor has but to remove his speech appliance to remember how far he has climbed; it keeps him humble and appreciative, not intentionally, but because only mechanical means, so far in science, can "cure" his ills. Every cleft palate person makes a voice recording on entering the clinic, a second recording when he graduates, so that he may hear just how much he has accomplished. Graduates of the Victor Club are the happiest, most enthusiastic of human beings.

Dr. Cooper, in 1938, was sponsored by one or two local fraternal groups, by child welfare organizations, community groups. What his nonprofit setup has done for a few hundred men, women, and children—his plastic surgeons prefer to catch the cleft palate person as soon after birth as possible, but of necessity take them as they come—dentists, orthodontists, speech therapists, and consultants, dental hygienists, physicians, surgeons, and family doctors can do for the rest of that army of 200,000. Dentists in the community should start it. Kiwanis and other organizations can and should sponsor this important work. There is virtually no literature on it, but Dr. Cooper and his staff will furnish interested, and necessarily altruistic, dentists with such as they have, as a basis on which to start. At present the Lancaster Cleft Palate Clinic's associates are: One director, dentist, Dr. Herbert K. Cooper, one psychologist, two speech clinicians, two orthodontists, one dental hygienist, one consulting radiodontist, one dental technician, one oral surgeon, two plastic surgeons, one pediatrician, two clinician physicians, two dental consultants, one otologist (cleft palate persons often have hearing losses, undetected until they enter the clinic).

Dr. Cooper catered at first only to cleft palate cripples in Lancaster and Lancaster County, Pa., but when men and women came to him from Montana he noted that they very much resembled the people of his own community. He has never turned anyone down, whether or not that one could pay the costs; this attitude has kept him happily financially acrobatic, since instead of drawing the $3,000 yearly provided in the clinic's charter, he pays $6,000 yearly out of his income as a dentist, to keep the clinic going. If he needed to find $60,000 he would somehow do it. The same feeling about it is necessary to complete success anywhere, he feels.

"We can cure a cleft palate cripple of anything but a Pennsylvania Dutch accent," says Cooper, "and we make that clear enough to be unmistakable!"

Young cleft palate persons are problems, often highly antagonistic to the world. Cooper opens his arms wide to these, as if they were his children, and knows that victory is attainable when he pulls a twisted grin from the scowling, weeping cripple—and nothing is quite as twisted as the grin of the cleft palate person.

Cooper's plastic surgeons, Drs. Robert H. Ivy and Lawrence Curtis, of Philadelphia, do wonders with harelip. One of Cooper's prize exhibits is a color movie of an operation on the lip of a 3-week-old baby girl whose harelip was a

monstruous thing. The picture ends with the baby smiling, six weeks after the operation. Cutting, splicing, and grafting literally work miracles. The squeamish viewer forgets in a few moments just what he is watching unreel and the smile pays for it all.

In every way he can, Dr. Cooper tries to contact dentists around the world, in the hope of inducing them to assemble corps of associates, along the lines he has tried out and found good, devoted to the task of cleft palate cripple rehabilitation. He constantly calls attention to the fact that "cleft palate is probably the most frequently found congenital deformity existing today."

Dr. Cooper does not introduce newcomers to his clinic to any members of the Victor Club as such, though such members may be assisting him in the examination of applicants. While he has so far had no failures, Cooper takes no chances. If an applicant *does* fail it will do him no good to know how far he might have climbed. But in his own mind Dr. Cooper sees every applicant as a Victor Club member *already,* and guides him to that end. Girl graduates who never had dates because boys could not look at their twisted noses and faces without shuddering, revisit the clinic to express themselves radiantly because they are now dating, not necessarily with another clinic "graduate," either.

Victor Club members go on to college. They do everything they dreamed they might do, when dreams were utterly hopeless. They insist, at their annual meetings, that Dr. Cooper be present. He represents father, brother, friend, confessor, to them—roles nobody would play before they were reclaimed.

A Victor Club meeting is one of the strangest things, one of the most poignant, one of the most inspiring, the researcher can find. Not many outsiders are invited, for strange things sometimes take place. A member will face his associates and make a ringing, precisely worded speech. He will gleefully repeat words, sounds, that were beyond him, or her, before treatment, while other members applaud with huge delight. Then, lest they forget, any of them, he, or she, is likely to remove the speech appliance deftly and do a bit of preclinic mumbling. There is never any laughter when this is done. Every Victor Club member can remember how galling laughter can be, and *was,* for each of them, only yesterday.

Applicants undergoing treatment at the clinic, which may require weeks or months (usually months) live on the premises, eat in, or are provided with jobs in carefully selected homes, homes of people who are happy, and thus the best examples for men and women being restored to normal. Cooper or his associates screen such homes as carefully as if their "pupils" were being offered them for adoption, which may sometimes happen, too.

Every human being is an individual. Every cleft palate cripple is an individual with personal idiosyncrasies accented, sometimes to the point of utter confusion. Cooper and his associates at the Lancaster Cleft Palate Clinic work on these emotional and spiritual items as deftly as plastic surgeons work on the cleft lips, dentists on the twisted or supernumerary teeth, technicians on the speech appliances *which must be as individual as the people who wear them,* physicians on collateral ailments, speech therapists on speech retraining, for if

these items are not adjusted the "graduate" remains forever a problem, and a cripple; which, if he does, prevents his "graduation," to Cooper an unthinkable contingency.

The dentist who would take on this kind of work must have the interest of the community in mind *first*. So must his associates. One other thing: Dr. Cooper uses a lay person, Mrs. Kathryn Cushman, as "Central Control." She is nominally his private secretary, but she presides at conferences held at the close of each clinic day, acting as determined "referee." Cooper has found that each specialist, being human, is likely to believe his own specialty all important, which it is, provided all the other specialties participate as carefully, as determinedly. Kathryn Cushman, a woman of much experience as an executive, is impartial. For the rest of the conference, throw the specialists together and let them go to it. "If we didn't love one another so much," a speech therapist said, "I do believe we would *fight!*"

Sometimes one wonders what *else* they could call their conferences; but if they can continue to turn out radiant Victor Club members, let them fight, whether they love one another or not! Their combined brains total certain reclamation for the oral cripple.

THUMB-SUCKING AND ITS RELATIONSHIP TO MALOCCLUSION IN CHILDREN

W. H. Littlefield, B.D.S. (Durham), H.D.D. (Edinburgh),*
Newcastle upon Tyne, England

THERE is little doubt that thumb-sucking is one of the oldest of human habits and for centuries now children have sought the solace and comfort of their thumbs. We have been given ample evidence of this, for thumb-sucking in children was common enough to be observed and portrayed by several artists many hundreds of years ago. Bragman (1931), for example, describing the portrayal of the habit in art, mentioned the thumb-sucking infant who can be seen in the "Adoration of the Magi" by Ghirlandaio. He also stated that the habit can be noticed in the nude infant, lying among the flowers and adored by the kneeling mother, in the painting by Filippo Lippi in the Berlin Museum. It is interesting to note that both of these artists, Ghirlandaio and Filippo Lippi, lived and worked as long ago as the fifteenth century. Yet it was not until some five hundred years later, in the nineteenth century, that the habit received attention in the literature when it was first described by Imrie in 1841.

Since that time the subject of thumb-sucking has been considered by numerous orthodontists and others and a wide variety of opinions have been expressed. In the first place many differing views are held on the number of children who indulge in the habit. Langford (1939), for instance, went so far as to say that it can be observed in nearly all children, though most writers would agree that this is an exaggeration. The general opinion seems to be that the habit is common during childhood, and my own experience in the practice of orthodontics confirms this view.

However, a study of the literature reveals that only on three occasions has an actual inquiry into the incidence been made. In America Levy (1928) stated that in a series of 112 children, it occurred in as many as 28 (or 16 per cent), and Johnson (1939), analyzing 989 cases of malocclusion, came to a similar conclusion when he found it in 173 (or 17.49 per cent). More recently, in New Zealand, Bliss (1945) reported that in an examination of 300 children, the incidence was 17 per cent. On the average then I think we may conclude that thumb-sucking occurs in about 17 per cent of children.

THE HABIT

The habit can be observed at all ages, and Salzmann (1943) is of the opinion that it may even be initiated in utero. He stated that during the eighth and ninth months, when the fetus shows increased muscular activity, the thumb may find its way into the mouth.

*Dental Hospital, Newcastle upon Tyne.

After birth the habit may occur very early in life. Indeed I have frequently found a mother maintaining that her child has sucked his thumb since the day of his birth. Subsequently the habit may arise at any time. It may occur during weaning: at other times it is attributable to the painful eruption of deciduous teeth and often in these patients the habit does not persist.

I think it is important to recognize that a child passes through a period, from 6 to 12 months of age, when he tends to examine objects by carrying them to his mouth, and when toys are not conveniently at hand, he is particularly likely to put his finger or thumb to his mouth. Sillman (1948) emphasized that this mouthing of the thumb, which occurs during the hand to mouth reaction period, should be differentiated from true thumb-sucking. Yet, as Salzmann (1943) very rightly pointed out, there is always a danger of this passive action being converted to an active one.

After the age of 2 the habit usually declines but it is often observed to persist at bedtime when children are tired. However, in some older children it may continue, or even arise, and it is usually at this time that the mother brings her child to the orthodontist. She may have become anxious about the habit because of an obvious irregularity of the child's teeth. The orthodontist is then faced with what is often a very difficult problem and a state of affairs which can be extremely pathetic. The child, nervous and shy and ashamed of his thumb-sucking, is reluctant to discuss the subject. He may have been nagged at and scolded and subjected to various measures designed to stop his habit and, becoming increasingly introspective, turns more and more to the solace and comfort of his thumb. The mother, conscious that the child is different from other children, may even despise her own child for indulging in what she regards as a disgusting and dirty habit. Indeed, that bond of mutual affection, which exists between every mother and her child, may be strained to breaking point so that they may be quite out of sympathy with each other.

Finally, thumb-sucking is sometimes continued into adult life. Recently, for example, I examined a girl 20 years of age who still sucked her thumb. She had consulted her dentist about the appearance of her upper incisors. These were markedly proclinated and she wanted them corrected before being married.

Let us now turn to a typical patient who shows the habit. We find that one thumb is sucked and that the other is left alone. Usually this is a constant feature that while children differ in their preference for the right or left thumb, once the selection has been made, only that particular thumb is sucked. If we now observe the actual habit in action the child's mandible is seen to be depressed in order to create a vacuum. His cheeks are drawn in and his lips are tightly contracted around his thumb. The thumb is held between his teeth usually with the palmar surface upward. It may be placed more or less horizontally, pressing upward on his upper incisors and downward on his lower incisors. Often, however, it is more vertically held and presses forward on his upper incisors and backward on his lower incisors.

Sometimes we find that the habit is practiced in combination with some other action which is performed by the free hand. For example, a child, while

sucking the thumb of one hand, may use the other to stroke or pull at his ear or hair or he may prefer to finger a piece of silk or woolen material. It is interesting to note that, according to Levy (1928), these accessory habits can often be traced to actions which were carried out by the free hand when the child was being fed during infancy.

EFFECTS ON THE DENTITION

The effects of thumb-sucking on children's teeth are well known to all who practice orthodontics. The typical malocclusion, usually ascribed to the habit, is produced by the thumb acting as a lever pressing the maxillary incisors labially and often, at the same time, the mandibular incisors lingually. In addition to this certain variations may occur. In some children the thumb, being held more horizontally, presses the incisors into a position of infraclusion and allows the posterior teeth to elongate into a position of supraclusion. This results in an anterior open-bite. In other children the cheeks are sucked inward so vigorously that the dental arches become contracted.

Here then we have what appears, at first glance, a clear-cut case for cause and effect in the etiology of malocclusion. However, those who have studied the subject are by no means agreed on this. For example, Humphreys and Leighton (1950) were impressed by the number of children with deformity of the jaws produced by thumb-sucking, but Bakwin (1948) contends that it is much less often a cause of malocclusion than is generally believed.

A study of the literature seems to indicate that only on three occasions has an actual investigation been made into the incidence of malocclusion in thumb-sucking children. Lewis (1930) found a typical malocclusion in as many as 24 out of the 30 thumb-suckers he examined, while Johnson (1939), analyzing the dental irregularities of 173 thumb-suckers, reported that in only 3 could the habit not be a cause. More recently Bliss (1945) came to the conclusion that a large proportion of thumb-suckers had a malocclusion caused, or at any rate aggravated, by the habit.

Nevertheless, although the general opinion is that thumb-sucking is a definite cause of dental irregularity, many cases are found where children have sucked their thumbs over long periods and yet no malocclusion has resulted. What then are the reasons for this apparent inconsistency? Clearly a number of factors are involved.

In the first place the character of the bone varies in different individuals. This is evident from the fact that, in the practice of orthodontics, similar appliances in different individuals frequently give rise to quite different amounts of tooth movement. Now the movement of teeth in bone, whether by thumbs or orthodontic appliances, fundamentally depends on the activity of osteoclasts. Therefore it seems that the osteoclast response varies in individuals, and this, in part, accounts for variations in the effect of thumb-sucking.

Again the frequency and duration of the habit may vary and it is logical to assume that when it is frequently indulged in over a long period the more marked deformity is produced.

The age at which the habit ceases is important, and Lewis (1930), investigating this point, found that malocclusions caused by thumb-sucking showed a general tendency to correct themselves provided the habit stopped before 5 years of age. However, when it continued after this age the malocclusions were not self-correcting.

Finally, the relationship of the jaws must be considered and this is of special significance when the thumb is sucked in such a manner that a force is exerted on the teeth in an anteroposterior direction. Thus, on the one hand, in cases of superior protrusion the deformity tends to be aggravated but, on the other hand, in cases of inferior protrusion the deformity tends to be corrected. In this connection it is interesting to note that, while Humphreys and Leighton (1950) came to the conclusion that the habit emphasizes a pre-existing tendency to distoclusion, Johnson (1939) suggested that when the habit occurs in cases of inferior protrusion it should not be discouraged.

To sum up, there is no doubt that thumb-sucking is a habit frequently found in children and that it is a recognized cause of malocclusion. Let us now consider the causes of thumb-sucking and seek methods of prevention and treatment.

ETIOLOGY

A survey of the literature on the etiology of thumb-sucking reveals many different and conflicting opinions. The possibility of a hereditary factor has been explored and, in this connection, Pearson (1948) contended that there is a familial variation in the need for sucking which predisposes to the habit. Moreover, there is considerable evidence to support this view. Thumb-sucking has been demonstrated in the fetus and observed in newly born babies, presumably before any environmental factor could become effective. Then the habit is frequently encountered in children of the same family but, of this observation, it is only fair criticism to point out that children of the same family are exposed to the same environment which, in itself, may be a cause. Nevertheless, cases often occur where no such environmental cause can be found and we are led to conclude the alternative familial one. My own experience is that the habit does not invariably run in families. Recently, for example, I have examined three sets of twins in each set of which one twin had an abnormal sucking habit while the other had not. I am inclined to think, therefore, that there may be an inherited predisposition to thumb-sucking but that heredity is not the only cause.

Another opinion about thumb-sucking that is generally held is that it is an activity imitative of feeding at the breast, and Freud has suggested that it is of sexual origin. However, sexual or otherwise, it is obviously a habit which the child enjoys. Yet feeding, whether at the breast or not, is indulged in primarily in order to satisfy hunger. Consequently it is suggested that hunger is a cause of thumb-sucking, and Langford (1939) expressed the opinion that frequently it occurs only when the child is hungry.

Then sometimes it is claimed that even if the thumb-sucking child does not suffer actual hunger his diet may be deficient. In support of this contention

Humphreys and Leighton (1950) found definite evidence that mothers of thumb-sucking children had poor health during the time of suckling. They suggested that poor health of the mother results in poorer quality of milk and that this, in its turn, gives rise to a subclinical hunger in the child which may be the cause of the thumb-sucking.

The most detailed investigation into the etiology was made by Levy (1928), who concluded that insufficient food was a sole factor in relatively few cases. He found the commonest cause of the habit was incompleteness of the sucking phase in the feeding act and stated that it was more frequent in children fed on a four-hour schedule than in those on an unscheduled feeding regime.

Many other suggestions have been made about the etiology of thumb-sucking, but the essence of them all is that it is a sign of a lack of harmony between the child and his environment. On the one hand the child may be nervously imbalanced or physically subnormal and, in this respect, Salzmann (1943) listed the following disorders as found in thumb-suckers: muscular tics, retarded growth, deficient weight, disordered body functions, unsound sleep, deficient appetite, restlessness, excessive crying, inability to concentrate, and unsocial behavior. On the other hand any upset in a child's environment may precipitate a thumb-sucking habit. Cooke (1944), for example, stated that weaning, especially if sudden, or painful teething may be causes. Again punishment and excessive parental control, or lack of suitable toys, may all induce him to seek the comfort of his thumb. Indeed, any occurrence which leads the child, rightly or wrongly, to feel neglected or to feel he is not receiving sufficient affection and attention may be a factor. Often the advent of another child, an unhappy atmosphere at home, the loss of a loved one, the untruthfulness of parents (whereby the child loses his confidence in them) all may cause him to find consolation in thumb-sucking.

To sum up, there is a familial variation in the need for sucking which may predispose to thumb-sucking. This accounts for its appearance during the first few weeks of life. Then, in infancy, the most important cause is a lack of sucking activity during feeding. Thereafter the habit is to be regarded as a sign of a disharmony between the child and his environment. Either the child or his environment, or both, may be at fault.

From this consideration of the etiology of thumb-sucking it is possible to evolve methods of treatment.

TREATMENT

The treatment of thumb-sucking may be divided into measures designed for its prevention and those designed for its remedy.

In a consideration of preventive measures it is necessary to decide when these are indicated. In the first place, since there is probably a hereditary predisposition to thumb-sucking, prevention is best begun whenever a familial tendency to the habit is discovered. Furthermore, we have seen that during the hand to mouth reaction period, there is a danger of the passive mouthing of the

thumb being converted to an active habit. Consequently, if, during this period, the passive action appears to be excessively indulged in, preventive measures are also indicated.

Any consideration of the prevention of thumb-sucking must invariably raise the controversial problem of whether or not pacifiers should be allowed. On the one hand many orthodontists are of the opinion that they produce the same harmful effects as thumb-sucking and consequently are not to be recommended. On the other hand, Bakwin (1948) and Sillman (1948), for example, believe that they may be used during the first twelve months of life, after which they should be gradually withheld. Examining the problem more closely, we find that Humphreys and Leighton (1950) assessed the relative effects which both pacifiers and thumb-sucking have on the mouth, and came to the definite conclusion that pacifiers, although harmful, were not so damaging as thumb-sucking. Consequently we must face the fact that pacifiers are the lesser of two evils. My own experience has been that those pacifiers which are constructed entirely of rubber often give rise to very marked deformity of a child's mouth. I therefore consider that, although we may advocate their use in one or two specially selected cases where they should be gradually withheld soon after 1 year of age, we should be careful to specify the type of pacifier. It should be so constructed that while the teat may be made of rubber the diaphragm should be entirely of bone.

It has been pointed out that one of the principal causes of the habit is probably a lack of sucking activity during feeding and that it is more common in four-hour scheduled feeders. Consequently preventive measures should include a more leisurely feeding regime and a less rigid feeding schedule.

Since the most important cause of thumb-sucking seems to be a disharmony between the child and his environment, preventive measures should be directed toward the correction of one or both of these. On the one hand it may be necessary to refer the child to a pediatrician for general treatment, with special attention to any nervous instability. On the other hand the child's environment often needs adjustment. It is best to explain the problem to the parents so that their sympathetic cooperation can be enlisted. They should be advised to provide the child with suitable toys which will stimulate his interest and give him opportunities to be active and experiment. There should be a happy home atmosphere with a minimum of regulation, and sometimes extra parental affection and companionship are required.

Turning next to consider remedial measures, I think it is important to bear in mind that any malocclusion caused by thumb-sucking tends to correct itself, provided the habit ceases before about 5 years of age. Therefore, apart from instituting the preventive measures mentioned, it is wise to disregard the habit until after this age. But when it persists after 5 years of age, or recurs at this or a later age, remedial measures are clearly indicated.

In the first place the majority of orthodontists are agreed that nagging, scolding, and forceful correction by punishment are not to be recommended.

The appliances which have been advocated for stopping the habit are numerous. Many of them are ingenious and not a few are inhuman. Some

are designed as elbow splints to prevent the arm bending sufficiently for the thumb to reach the mouth. Then, working on the principle that thumb-sucking is a pleasurable experience, other measures are designed to render the thumb unpleasant to the mouth. Thus the application of bitter medicaments, or adhesive tape, to the thumb have been recommended together with the use of various types of mitts and thumb stalls. Also on this same principle, other appliances are designed to render the mouth unpleasant to the thumb or to break the seal during the sucking action. These appliances may be removable plates or wire arches fixed to bands which are cemented on the teeth.

However, the danger of all these forceful methods of correction is that, although they may stop the thumb-sucking, they do nothing to eradicate or alleviate its cause. Consequently, this same cause may find an outlet in some other way. For example, in some cases the child develops a stutter. In other cases a tongue-sucking habit supervenes. This, of course, is less obvious to the parents but subsequently is far more difficult to treat than the original thumb-sucking.

At this stage mention might be made of Dunlap's method of correction by what he terms the Beta hypothesis. Here the child is instructed to practice the habit consciously and it is emphasized that he must realize that he is doing so with the object of correcting his thumb-sucking.

However, a more enlightened and logical treatment of thumb-sucking must surely depend on a knowledge of its etiology and is restricted to remedial measures related to the child himself and those related to his environment.

If the child is nervously unstable or physically subnormal, as indeed many of them are, he should be referred to a pediatrician for general treatment. Sometimes an obstinate case needs the help of a psychiatrist. In practice, however, an appeal to the child's reason is usually sufficient, but this must be done carefully and sympathetically. He should be shown models of his mouth and it should be carefully explained to him how his thumb is causing an irregularity of his teeth. At the same time it is necessary to tell him that he may not succeed in correcting the habit immediately but that a great deal of effort on his part will be required. In the majority of cases the child makes a definite effort to stop sucking his thumb and in many cases he succeeds. Later, however, it is sometimes necessary to provide an appliance in order to help him. Yet this must be given with the careful explanation that it is not to prevent his sucking his thumb but rather to remind him when he is going to do it, so that he may stop himself. In practice I find that the best type of appliance is the Andresen. This is sucked by the child. Consequently a substitution mechanism is effected and the mental trauma is lessened. At the same time, of course, the habit is checked. Moreover, this appliance can often be adapted in order to treat the dental irregularity caused by the thumb-sucking.

When we come to consider the correction of a child's environment, it is obvious that this may present many difficulties. However, if the cause of the thumb-sucking can be simply explained to the parents, their help can usually be enlisted. It must be emphasized to them that the child will not find it easy to stop his habit and will require all the sympathy and encouragement they

can give him. Often this is best effected by comparing the difficulties of a child trying to cease thumb-sucking with those of an adult giving up smoking. They should be instructed to disregard the habit entirely and stop any nagging, scolding, or forceful methods of breaking it. If they see him sucking his thumb they can help him best not by mentioning it to him, but by diverting his attention to something else. They should provide plenty of opportunities for him to amuse himself and at the same time give him extra attention and affection.

SUMMARY

1. Thumb-sucking is a common habit occurring in about 17 per cent of children.

2. It is a definite cause of dental irregularity and the majority of thumb-suckers have a malocclusion either caused or aggravated by the habit.

3. A consideration of its etiology reveals that there is an inherited predisposition but that the most important causes are an inadequate sucking activity during infancy or a disharmony between the child and his environment.

4. A common-sense treatment of thumb-sucking must depend on a knowledge of its etiology and should include methods of prevention. Our aim should be not so much to stop the habit, but to seek for the underlying cause and institute measures to eradicate or, at any rate, alleviate it.

REFERENCES

Bakwin, H.: Thumb and Finger Sucking in Children, J. Pediat. **32**: 99-101, 1948.

Bliss, D.: Thumb and Finger Sucking, New Zealand D. J. **41**: 103-104, 1945.

Bragman, L. J.: Thumb Sucking and Other Auto-erotic Tendencies in Children, as Portrayed in Art, J. Nerv. & Ment. Dis. **74**: 708-709, 1931.

Cooke, B.: Thumb Sucking and Similar Habits, Dent. Mag. & Oral Topics **61**: 169-173, 1944.

Humphreys, H. F., and Leighton, B. C.: A Survey of Antero-Posterior Abnormalities of the Jaws in Children Between the Ages of Two and Five and a Half Years of Age, Brit. D. J. **138**: 3-15, 1950.

Johnson, L. R.: The Status of Thumb Sucking and Finger Sucking, J. Am. Dent. A. **26**: 1245-1254, 1939.

Langford, W. S.: Thumb and Finger Sucking in Childhood, Am. J. Dis. Child. **58**: 1290-1300, 1939.

Levy, D. M.: Finger Sucking and Accessory Movements in Early Infancy, Am. J. Psychiat. **7**: 881-918, 1928.

Lewis, S. J.: Thumb Sucking: A Cause of Malocclusion in the Deciduous Teeth, J. Am. Dent. A. **17**: 1060-1073, 1930.

Pearson, H. J. P.: The Psychology of Finger Sucking, Tongue Sucking, and Other Oral "Habits," AM. J. ORTHODONTICS **34**: 589-598, 1948.

Salzmann, J. A.: Principles of Orthodontics, Philadelphia, 1943, J. B. Lippincott Company, pp. 93, 368, 371.

Sillman, J. H.: Serial Study of Occlusion (Birth to Ten Years of Age), AM. J. ORTHODONTICS **34**: 969-979, 1948.

In Memoriam

KIRMAN E. TAYLOR
1895-1952

KIRMAN E. TAYLOR was born in Junction City, Kan., on Oct. 9, 1895. He was graduated from high school in Lander, Wyo. Subsequently he enrolled in the Denver Dental College and was graduated in 1919. He received graduate training at Forsythe Infirmary. He was associated with Dr. A. H. Ketcham from 1923-1927. He practiced in Denver Colo. until retirement a year ago.

During World War I Dr. Taylor served in the Dental Corps. He was a member of the American Legion, a past master of Palestine Masonic Lodge, past venerable master of the Rocky Mountain consistory, member of El Jebel Shrine and the Royal Order of Jesters, and past patron of the Park Hill Order of the Eastern Star.

In addition to membership in local and state dental societies, he was a member of the American Dental Association, Rocky Mountain Society of Orthodontists, and American Association of Orthodontists. He was also certified by the American Board of Orthodontics as well as holding membership in Psi Omega Dental Fraternity. In 1939 he was awarded first prize for an exhibit showing the results of orthodontic treatment at a Public Health Show given in Denver and the same year received third prize for the exhibit shown in the Scientific Exhibit of the American Dental Association at Cleveland, Ohio. He was author of articles pertaining to his chosen specialty.

He died suddenly on Jan. 31, 1952. His funeral was held in Denver on Monday, February 4. In addition to his wife, he leaves his mother, two sisters, and four brothers.

Our profession has lost a valued member. He will be greatly missed by his many friends.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Genetics and Physical Anthropology: By H. H. Strandskov and S. L. Washburn, Editorial. *Am. J. Phys. Anthropol.* vol. 9 (new series), no. 3, pp. 261-263, 1951.

There is a tendency to contrast genetics and physical anthropology as if they were necessarily opposed. The basic idea of race is the same no matter whether races are described in terms of anatomical traits or gene frequencies. Races are large groups which differ in heredity. If all mankind mated in a random manner, there would be no races. Partial isolation is caused primarily by geographic factors, reinforced by custom. Since there is partial isolation, genetic distinction may develop. These distinctions between varieties of mankind may be described either in terms of anatomical traits (phenotypes) or gene frequencies. Both may be used together as a race may be characterized by skin color ranging from dark brown to black, hair curly to very kinky, and a high frequency of the gene Rh°. There is no contradiction or conflict in the use of both genotype and phenotype in the description of races.

If the genetic basis of a trait is known, it is possible to describe the situation much more clearly and precisely. Mutation can only be discussed relative to a particular gene. Genetic drift can be investigated only if population size and gene frequency can be estimated. The results of migration and hybridization can be stated precisely if gene frequencies are known, and the outcome of future crossing can be predicted. Selection acts directly on the phenotype, and causes evolution by changing gene frequency. Precise, quantitative statements of the process of race formation and of the differences between races can only be made in terms of genetic information. Anyone trying to understand the races of man who does not use the available genetic information gives himself a serious, unnecessary handicap. But anyone who does not use the anatomical information is equally shortsighted. There are hereditary variations in the form of the nose, teeth, muscles, and many other parts of the body. These variations occur in different frequencies in various races. A full description of racial differences and of the causes and process of race formation must take these phenotype differences into account. Complete understanding of a gene involves knowing its expression in the phenotype and its significance to the organism (not just its frequency in the population). Similarly, full understanding of an anatomical trait involves knowing its genetic origin. The more that is known of human genetics, anatomy, and ecology, the more will be known of races and the process of race formation.

The races of man should be the same whether arrived at by genetic or anatomical methods. The number of large, partially reproductively isolated groups should not be changed by the method of investigation. Naturally, as

knowledge increases, our ideas of the degree of distinctness of a race or of the interrelations of races may change. For example, hypotheses concerning the relation of the Bush race to other African groups will vary, but there is just one such group no matter how its anatomy is described. There is no conflict between genetic and anatomic methods of studying races, provided the descriptions are based on populations and the same concept of evolution is used. If races are based on types selected from breeding populations, then genetic and anatomical races will be different. Likewise, if the outmoded concepts (orthogenesis, irreversibility, exclusive use of nonadaptive traits, or arbitrary sorting methods) are used, then anatomical and genetic races may be different. Since many of the human races in the literature are based on these erroneous concepts, at the moment there may appear to be a conflict between the methods of genetics and anthropology. But this appearance is superficial and misleading. Human genetics and human anatomy supplement each other, and both are necessary for the understanding of race. As knowledge of human genetics advances, the apparent barriers between genetics and anatomy should disappear.

Your Mind and Appearance, A Psychological Approach to Plastic Surgery: By Adolph Abraham Apton, New York, Citadel Press, 1951. Price, $3.00. 212 pp.

Apton, a practicing plastic surgeon in New York City, discusses in simple language the problems which those with facial and bodily disfigurements suffer in their daily life. He presents his subject matter as it relates to children, adolescents, and adults.

"Patients seeking surcease of sorrow over their facial or bodily disfigurements are in no sense all neurotics or freaks," says Apton. "They are normal people with frustrations. . . . They desire what all normal people seek—'self-respect, happiness, and love.' Even before the young child becomes fully aware of his deformity, he is already a problem to his parents, relations, and friends. These require orientation in their reactions to the malformed child.

"In early adolescence," we are told, "an orthodontist can change the dental malformation to a degree that it almost disappears." However, as this reviewer has pointed out elsewhere, facial malformations which combine a receding chin and a long nose show a startling change of contour after rhinoplasty when the facial features are given a different perspective.

The cleft palate and cleft lip child is discussed from the standpoint of his relation to his environment, including his family, friends, and the outside world. The team approach in the handling of these patients is stressed. The correction of clefts by means of surgery or prosthesis is insufficient because it does not correct psychosomatic disturbances and does not help the patient in making adjustment to his new physical state.

Apton considers orthodontics, if not also all of dentistry, as subdivisions of plastic surgery. He agrees that "the orthodontist must approach his patients with psychologic understanding in order to inspire the necessary faith and confidence.

Among the topics discussed in the book, in addition to those already mentioned, are: disfigurements of the nose, ears, and lips; deformity of the male breast, the female breast, birthmarks, and other conditions. The limitations of reconstructive surgery are presented.

In his account of "the Public versus the malformed person," Apton touches upon the reaction of children to adults who have visible facial or bodily malformations. Thus a pediatrician found some children uncooperative because of his own facial disfigurement. After undergoing plastic surgery the pedia-

trician found his patients more expressive to his attempts to gain their confidence and friendship. Disfigurement arouses abhorrence in children. This may later be displaced by a feeling of pity as the child grows older.

Orthodontists and practitioners of dentistry in general will find much in this book which will help them in the understanding and handling of their own patients. The author evidences a wide knowledge of the related science of psychology in treating patients who suffer from personality involvements traceable to physical deformity. The book is highly recommended to practitioners and patients alike.

J. A. Salzmann.

News and Notes

American Association of Orthodontists

The scientific program for the 1952 session is complete. All members of dental, medical, and allied professions are cordially invited to attend.

The following is a classification of nonmembers and schedule of attendance fees which will be charged at the time of registration:

A. NO ATTENDANCE FEE

1. Full-time teachers in university dental schools.
2. Full-time graduate or postgraduate students in university orthodontic departments.
3. Dentists from outside Canada or the United States who are members of recognized dental or orthodontic organizations.

B. ATTENDANCE FEE $10

1. Associate, junior, or probationary members of constituent societies of the A.A.O.
2. Those whose applications for membership in constituent societies of the A.A.O. are pending.
3. Associates (in practice) of A.A.O. members.
4. Part-time teachers in uinversity dental schools.
5. Part-time graduate or postgraduate students in university orthodontic departments.

C. ATTENDANCE FEE $20

1. Graduates of university orthodontic departments who are not members of constituent societies of the A.A.O.
2. Other guests.

The officers and committees of the American Association of Orthodontists for 1952 follow:

Bernard G. deVries	Brooks Bell	Malcolm R. Chipman	George R. Moore
President	President-Elect	Vice-President	Secretary-Treasurer
705 Medical Arts Bldg.	4150 Mockingbird Lane	Paulsen Bldg.	Box 8
Minneapolis, Minn.	Dallas, Texas	Spokane, Wash.	Ann Arbor, Mich.

BOARD OF DIRECTORS

One director from each constituent society

Bernard G. deVries	George H. Siersma	Walter S. Sargeant
Brooks Bell	Silas J. Kloehn	Philip E. Adams
Malcolm R. Chipman	Frederick R. Aldrich	Frederick T. West
George R. Moore	Allan G. Brodie	Clyde O. Wells
	J. A. Salzmann	E. C. Lunsford

COMMITTEES

Budget	*Constitution and Bylaws*	*Public Health*
George H. Siersma, 1952, Chairman	Philip E. Adams, 1952, Chairman	J. A. Salzmann, 1955, Chairman
1232 Republic Bldg.	106 Marlborough St.	654 Madison Ave.
Denver, Colo.	Boston, Mass.	New York, N. Y.
William A. Murray, 1953	Oren A. Oliver, 1953	Leigh C. Fairbank, 1952
Glenn F. Young, 1954	Leo M. Shanley, 1954	Herbert K. Cooper, 1953
		B. Holly Broadbent, 1954
		L. Bodine Higley, 1956

Publication and Editorial Board
Silas J. Kloehn, 1952, Chairman
515 Zuelke Bldg.
Appleton, Wis.
Earl E. Shepard, 1953
Joseph D. Eby, 1954

Public Relations
Frederick R. Aldrich, 1954, Chairman
327 E. State St.
Columbus, Ohio
Frank P. Bowyer, Jr., 1952
G. Hewett Williams, 1953

Education
Allan G. Brodie, 1954, Chairman
30 N. Michigan Ave.
Chicago, Ill.
L. Bodine Higley, 1952
Thomas D. Speidel, 1953

Research
J. A. Salzmann, 1952, Chairman
654 Madison Ave.
New York City
Robert E. Moyers, 1953
John R. Thompson, 1954

Judicial Council
Walter S. Sargeant, 1952, Chairman
807 Nicholas Bldg.
Toledo, Ohio
C. F. Stenson Dillon, 1953
Nathan G. Gaston, 1954

Nomenclature
Kyrle W. Preis, 1952, Chairman
700 Cathedral St.
Baltimore, Md.
Waldo O. Urban, 1953
George M. Anderson, 1954

Relief
Frederick T. West, 1952, Chairman
760 Market St.
San Francisco 2, Calif.
L. T. Walsh, 1953
W. Wayne White, 1954

Interrelations
Gerald Franklin, 1952, Chairman
1414 Drummond St.
Montreal, Quebec, Canada
John W. Richmond, 1953
Andrew F. Jackson, 1954

Necrology
Harry L. Keel, 1953, Chairman
Nissen Bldg.
Winston-Salem, N. C.
George H. Herbert, 1952
Scott T. Holmes, 1954

Laws and Infractions
Clyde O. Wells, 1952, Chairman
905 Montgomery Bldg.
Spartanburg, S. C.
Ralph G. Bengston, 1953
Holly Halderson, 1954
John B. McCoy, 1955
William M. Pugh, 1956

Military Affairs
E. C. Lunsford, 1955, Chairman
2742 Biscayne Blvd.
Miami, Fla.
W. Robert MacConkey, 1952
Ernest T. Klein, 1953
Marion A. Flesher, 1954
Paul V. Reid, 1956

Convention Planning
Howard E. Strange, Chairman
2376 E. 71st St.
Chicago, Ill.
Frank P. Bowyer, Jr.
Wilson R. Flint
Ashley E. Howes
John R. McCoy

Librarian
Charles B. Baker, 1954
636 Church St.
Evanston, Ill.

Program
Max E. Ernst, Chairman
1250 Lowry Medical Arts Bldg.
St. Paul, Minn.
L. Bodine Higley
Ernest L. Johnson
Silas J. Kloehn
Lowrie J. Porter
J. A. Salzmann (ex officio)

Local Arrangements
Leo M. Shanley, Chairman
7800 Maryland Ave.
St. Louis, Mo.
E. V. Holestine, Treasurer
8015 Maryland Ave.
St. Louis, Mo.
Otto W. Brandhorst
George H. Herbert
Benno E. Lischer
Albert C. Mogler
H. C. Pollock
Frank C. Rogers
Henry F. Westhoff
Joseph H. Williams

An information booth will be located near the registration desk. When you receive your questionnaire, a pamphlet will be enclosed with information of places you may wish to see while in St. Louis.

On Tuesday night there will be a baseball game between the St. Louis Browns and Cleveland. Please make reservations direct if you wish to attend that event. We plan to have our Association there in a group.

For any other information, please call upon us after your arrival.

YOUR INFORMATION COMMITTEE.

LADIES' ENTERTAINMENT PROGRAM

A program of interesting events for the ladies has been arranged for the meeting in St. Louis, April 20, 21, 22, 23, and 24, 1952. There will be an informal buffet supper in the Gold Room of Hotel Jefferson, Sunday evening, April 20, at 7:00 P.M., for both the ladies and the men.

The ladies will have a cocktail-buffet dinner at the University Club, Monday evening, April 21, at 7:00 P.M. Busses will leave the Twelfth Street entrance of Hotel Jefferson at 6:30 P.M. On this occasion, each lady is asked to wear her identification badge which she will receive upon registration.

A luncheon and radio show, in the Gourmet Room of the Park Plaza Hotel, are planned for Tuesday, April 22, at 1:00 P.M. Busses will leave the Twelfth Street entrance of Hotel Jefferson at 12:30 P.M.

The high lights of the convention will be Wednesday night, April 23, at 7:00. P.M., in the Gold Room of Hotel Jefferson—the president's reception, banquet, entertainment, and dance.

The wives of the officers of the Association, the wives of the presidents of the sectional societies, and the wife of the president of the American Board of Orthodontics are being asked to act as hostesses for the Monday night meeting. They will be assisted by the wives of the local St. Louis orthodontists.

EARL C. BEAN, CHAIRMAN,
LADIES' ENTERTAINMENT COMMITTEE.

Excerpt From Minutes of American Association of Orthodontists

An excerpt from the report by Dr. Joseph D. Eby, Chairman of the Editorial and Publication Committee, made to the Board of Directors of the American Association of Orthodontists, April 22, 1951, at Louisville, Ky., follows.

It has been thought for several years that inasmuch as the expense of illustrations has almost quadrupled, chairmen of program committees should be provided with a copy of the excerpt from the report. This would enable the chairmen to apprise a prospective essayist on the matter of illustrations in advance of his accepting the invitation to participate in the program.

It is thought that by this policy much of the disappointment caused by being unable to publish myriads of illustrations in the JOURNAL would be eliminated.—*Ed.*

EXCERPT FROM MINUTES OF A. A. O., APRIL 22, 1951, IN REGARD TO ILLUSTRATIONS

It is therefore recommended that the A. A. O. issue official instructions to all Presidents, Executive and Program Committees in order that essayists and authors, as far as practical, shall prepare their manuscripts and illustrations as uniformly as possible for publication. It is recommended that such instructions should direct that a written manuscript be accompanied by the minimal number of illustrations sufficient to portray the substance of the text to the reader. Attention may then be called to the fact that an essayist could ad lib all he wanted with illustrations upon presentation, without throwing a superfluous and extensive load of illustrations into the literature.*

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Hotel Jefferson, St. Louis, Mo., April 16 to April 20, 1952. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. C. Edward Martinek, 661 Fisher Bldg., Detroit 2, Mich. To be considered at the St. Louis meeting, all applications must be filed before March 1, 1952.

*Authors who insist on a number of illustrations in excess of the budget set up by the American Association of Orthodontists are permitted to pay for such excess personally.

Pacific Coast Society of Orthodontists

NORTHERN SECTION

The December meeting was postponed until February 15 in order to hear Dr. Clifford Whitman of Hackensack, N. J. One of his special interests has been the part played by habits in malocclusion.

CENTRAL SECTION

Our last quarterly meeting of 1951 was held at 545 Powell St., San Francisco, Monday, Dec. 10, 1951.

Members and guests present were:

Members: Arthur J. Corbett, Charles Biedinger, Lloyd M. Cox, F. M. Epley, Ernest Johnson, Robert B. Murray, W. W. Leslie, Frederick T. West, Haig S. Albarian, Lyle D. Russell, Elgin Jackson, J. R. Seaman, R. M. Curtner, A. F. Skaife, Theodore N. Engdahl, Homer A. Dahlman, Walter J. Straub, Harvey A. Stryker, Allen E. Scott, Ray A. Lussier, George W. Hahn, Charles W. Konigsberg, Raymond E. Brownell, Walter Bell, Harry S. Thompson, George H. Grover, L. A. Huberty, William S. Parker, Carl O. Engstrom, Ned H. Anderson, Howard H. Jan, Fred E. Havrilla, Seymore B. Gray, R. M. Railsback, Peter Picard, Reid M. Van Noate, Vernon L. Hunt, Arnold H. Weiser, Glendon Terwilliger, J. Kester Diment, Reuben L. Blake, Earl F. Lussier, Wendell L. Wylie, Roy C. Cowden, and George W. Hahn.

Guests: Irvin Marcus, Joseph Martinez, Robert F. Ramsay, Wilfred Wong, Norman Wong, Lewis H. Guy, Jack Smithers, George Merchant, Berthal J. Hartman, John E. Dumon, F. Barr Miller, William Ballard, Eugene E. West, Hugh Carpol, Donald E. Priewe, Robert Kemp, Jesse A. Linn, and Oliver E. Hartman.

The meeting was then turned over to Program Chairman Ray Brownell, who asked George Hahn to introduce the speaker of the evening, Jesse Linn of Los Angeles.

"Mixed Dentition"

Interesting cases in this classification were discussed and illustrated with kodachrome slides before treatment was inaugurated, during treatment to show the appliances, finally, many years later when dentition was complete and occlusion normal. These cases were all treated with the four permanent molars used for anchorage and bracket bands on the four upper and lower incisors. These were hooked up with ribbon arches, intermaxillary elastics, and cervical extraoral anchorage at night attached to the upper arch over the upper lateral incisors to avoid irritation of the corners of the mouth. Following the paper and slides, questions were in order from the floor followed by a table of plaster casts to better illustrate the results obtained.

SOUTHERN SECTION

The regular quarterly meeting was held at 875 South Western Ave., Los Angeles, Calif., on Friday, Dec. 14, 1951.

The meeting was called to order at 3 P.M. by Chairman Pro-tem Sydney Cross.

The afternoon speaker, Adelle Davis, A.B., M.S., discussed, "Nutritional Aids in Orthodontics."

A lively discussion ensued, as to how far a nutritionist should go in attempting to advise patients with orthodontic problems.

Officers elected for 1952 were:

Merle B. Davis, Chairman,
Calvin C. Garverick, Secretary-Treasurer.

Following the social hour and dinner, Program Chairman Robert Whitney introduced Barney Katz, Ph.D., Clinical and Child Psychologist, who spoke on, "Parent-Child Relationships."

Southern Society of Orthodontists

Chase-Greenbrier Photo, White Sulphur Springs, W. Va.

Photograph taken at the twenty-seventh annual meeting of the Southern Society of Orthodontists, White Sulphur Springs, W. Va., 1951.

Left to right: Dr. William H. Lewis, Petersburg, Va., Past President of Southern Society of Orthodontists; Dr. Bernard G. deVries, Minneapolis, Minn., President of American Association of Orthodontists; Dr. Walter McFall, Asheville, N. C., President of Southern Society of Orthodontists.

Announcement to Future Essayists

At the annual session of the American Association of Orthodontists in Louisville the following recommendations of the Publication and Editorial Board were adopted and are now official:

1. That many valuable articles are lost for publication because they were not prepared for such.
2. Authors expecting to have published, without expense, a profusion of illustrations impose a difficult task upon the editorial staff.
3. That the A.A.O. should adopt official instructions for essayists, including all constituent societies, as to the manner in which their manuscripts should be prepared for publication first and for presentation second.

The contract between the American Association of Orthodontists and The C. V. Mosby Company includes a stipulated sum to be spent for the illustrations of acceptable articles for publication. Any excesses of this budget must be paid out of the treasury of the A.A.O. and may become dangerously expensive.

Accordingly the A.A.O. passed a resolution in 1949 limiting the cost of illustrating any one article appearing in the JOURNAL. In the exercise of these instructions, the Editorial Staff of the JOURNAL has been most lenient and considerate, but the budget must be held within its limit. Excess costs of illustrations may be paid by the authors or other outside sources, if desired.

Avoid delay in the publication of your essay by limiting illustrations.

GEORGE R. MOORE, Secretary-Treasurer, A.A.O.
S. J. KLOEHN, Chairman, Publication and Editorial Board, A.A.O.

Central Section of the American Association of Orthodontists

The 1952 meeting of the Central Section of the American Association of Orthodontists will be held Oct. 13 and 14, 1952, at the Fontenelle Hotel in Omaha, Neb.

Rocky Mountain Society of Orthodontists

The Rocky Mountain Society of Orthodontists held its annual spring clinical meeting February 20 in Denver, Colo.

Dr. William A. Elsasser, of the United States Public Health Service, Washington, D. C., lectured on the orthometer and the first series of children measured with this instrument. A question and answer period followed.

A speech was given by Mr. Harvey T. Sethman, executive secretary of the Colorado State Medical Society, on public relations.

Following the luncheon, the afternoon was devoted to case reports and cases for group assistance.

Florida Orthodontic Study Group

The 1952 meeting of the Florida Orthodontic Study Group was held at Tampa, Fla., March 10, 11, and 12, 1952. The program follows:

Philosophy or Principles of the Universal Appliance.

Origin and Analysis of the Universal Appliance.

Lantern Slides. Spencer R. Atkinson.

Prenatal Growth. Latern Slides. George N. Boone.

Advantages of Stainless Steel in Orthodontic Therapy. John R. Avakian.

Construction of Appliances. Lantern slides plus samples and actual making of parts. Learn by seeing them, feeling them, making them. Dr. Atkinson, Dr. Avakian, and Dr. Boone.

Anatomical Landmarks Useful Aids in Early Diagnosis. Latern Slides Plus Anatomical Specimens. Dr. Atkinson, Dr. Boone, and Dr. Avakian.

Technique Work. Make and Demonstrate Appliances. Dr. Atkinson, Dr. Boone, and Dr. Avakian.

Treatment of Different Classifications of Malocclusion, Treatment Planning, and Retention. Sample Specimens. Dr. Atkinson, Dr. Boone, and Dr. Avakian.

Discussions and Business Meeting.

The officers of the group are: William A. Buhner, Chairman, Daniel Rachelson, Secretary, and Guy W. Toph, Treasurer.

European Orthodontic Society

The twenty-ninth annual congress will take place at Scheveningen from July 14 to 17, 1952, in the Kurhaus-Hotel, the center of the largest seaside resort of the Netherlands.

The dates of the meeting have been chosen in such a way that there will be ample opportunity after the E. O. S. congress is over for you to be in London in time to be present at the opening session of the congress of the F. D. I.

The leading theme chosen by the committee is "Early Treatment."

Only a small number of speakers will deal with some other subject. The following speakers have meanwhile consented to read a paper:

Dr. Allan G. Brodie, Chicago, U. S. A.
J. A. C. Duyzings, Netherlands.
W. Grossmann, London.
Prof. Dr. Rud. Hotz, Switzerland.
Dr. Andrew F. Jackson, Philadelphia, U. S. A.
Dr. P. Liskenne, France.
Dr. C. F. A. Morrees, Boston, U. S. A.
J. Murck Jansen, Netherlands.
Ch. F. L. Nord, Netherlands.
Ph. Pälsson, Sweden.
Kaare Reitan, Norway.
Dr. P. L. Rousseau, France.
Wm. Russel Logan, Scotland.
Prof. J. W. A. Tjebbes, Netherlands.
W. J. Tulley, England.

Besides the lectures the members will have ample time to give and attend table demonstrations. Applications from those who wish to give a demonstration are gladly received by Mr. D. F. Veldkamp, Stationsstraat 100, Zaandam, on the enclosed application slip.

The following colleagues have already offered their cooperation:

C. Bertram, Netherlands.
Saul M. Bien, New York, U. S. A.
Dr. L. de Coster, Belgium.
J. M. M. Crefcoeur, Netherlands.
J. A. C. Duyzings, Netherlands.
W. Grossmann, England.
Prof. Dott, Hoffer, Italy.
Dr. Andrew F. Jackson, Philadelphia, U. S. A.
Dr. Birger Kjellgren, Sweden.
Prof. Dr. G. H. R. v. Koenigswald, Netherlands.
Dr. Fr. Louglin, Jamaica, U. S. A.
Dr. H. P. D. Mühlemann, Switzerland.
Prof. E. Muzj, Italy.
Dr. A. Thornton Tayler, Sydney, Australia.

Although the congress officially opens on Monday, July 14, the organizing committee would be glad to welcome you on Sunday, so that you may take part in a trip by motor coach to various typical sight-seeing spots such as the old fisherman's village of Volendam and the picturesque old Amsterdam canals which will be visited by water-taxi.

J. A. C. Duyzings, President,
D. F. Veldkamp, Assistant Honorary Secretary.

French Society of Dentofacial Orthodontia

The Congress meeting of the French Society of Dentofacial Orthodontia will be held in Geneva, Switzerland, May 22 to 25, 1952.

The principal subjects will concern "The Normal Development of the Face."

For further information, write to Prof. E. Fernex, Institute of Dental Medicine, Rue Michelidu-Crest 43, Geneva, Switzerland.

The International Club of Facial Morphology

Founded in Paris on May 2, 1951, by Drs. Cauhépé (France), de Coster (Belgium), Dreyfus (Switzerland), Hoffer (Italy), and Korkhaus (Germany), The International Club of Facial Morphology was constituted in Lausanne on Sept. 3, 1951, in the presence of Mr. Paul Berger, a lawyer, with Dr. Dreyfus in the chair.

Its only object is the scientific study of the morphology of the face and skull; its members are chosen by the founder members, with no regard to frontiers.

Dr. Cauhépé,
3 rue Picot, Paris, France

Army Medical Service Reports 500 Certified Specialists on Duty

Five hundred officers now on active duty with the Army Medical Service have been certified as professional specialists, Major General George E. Armstrong, Army Surgeon General, announced today. This number includes 466 physicians qualified in 19 medical specialties and subspecialties, 23 board-certified dentists, seven specialists in psychology, and four in nutrition.

General Armstrong pointed out that the current situation contrasts sharply with that in 1945 when there were only 75 medical board specialists on duty with the Army. He attributed the increase to inauguration of the Army Medical Service's Graduate Professional Training Program in 1947 and to the recall of Reserve medical officers to active duty since the outbreak of the Korean conflict.

Of the total number of medical specialists, 311 are Regular Army Medical Corps officers, 148 are Reserve or National Guard physicians on extended active duty, and seven are retired

Regular Army officers remaining on active duty. When the Army began its residency training program five years ago there were only 99 Regular Army and 44 non-Regular physicians with board certification on active duty.

All but two of the 23 dental specialists belong to the Regular Army. They are certified in prosthodontia, oral surgery, periodontia, and oral pathology.

The Medical Service Corps now includes six officers certified in clinical psychology and one in industrial psychology, together with four diplomates in nutrition. Six of these officers are in the Regular Army. In addition, 57 Regular Army Medical Service Corps officers have received Ph.D. degrees and possess qualifying experience in fields such as entomology and sanitary engineering where specialty board certification is not possible.

Unlike the situation during World War II, many of the Medical Service's recently certified officers have obtained all their professional training and practice in the Army. General Armstrong said the Army is continuing to encourage medical and dental officers to obtain board certification in the interest of providing the best possible specialist care for American troops and assuring an adequate supply of instructors for the Army's residency training program.

The breakdown of Regular Army physicians among the various specialties as of Jan. 31, 1952, was as follows:

Anesthesiology, 8; dermatology and syphilology, 14; internal medicine and subspecialties, 57; pediatrics, 6; physical medicine, 5; psychiatry and neurology, 6; neurology, 2; psychiatry, 15; pathology, 28; preventive medicine and public health, 27; radiology and roentgenology, 34; obstetrics and gynecology, 8; ophthalmology and otolaryngology, 1; ophthalmology, 14; otolaryngology, 16, plastic surgery, 1; orthopedic surgery, 18; neurological surgery, 2; general surgery and subspecialties, 38; urology, 12.

The same breakdown for non-Regular Medical Corps officers on active duty is as follows:

Dermatology and syphilology, 2; internal medicine and subspecialties, 18; psychiatry and neurology, 2; neurology, 1; psychiatry, 16; pathology, 8; pediatrics, 12; preventive medicine and public health, 4; obstetrics and gynecology, 3; ophthalmology, 9; otolaryngology, 18; radiology and roentgenology, 24; plastic surgery, 1; orthopedic surgery, 4; general surgery and subspecialties, 21; and urology, 3.

Regular Army medical officers who have recently received certification from American specialty boards include:

Anesthesiology, Lieutenant Colonels Robert R. Jones and Edward P. Shannon, Jr.; *dermatology and syphilology,* Major Walter E. Horn; *internal medicine,* Colonel Daniel J. Waligora and Lieutenant Colonel William J. Thalmann; *pathological anatomy,* Colonel Albert M. Richmond and Captain LeGrand H. Thomas; *pediatrics,* Lieutenant Colonel William W. Currence and Captain Frederick C. Biehusen; *physical medicine,* Colonel Harold B. Luscombe; *preventive medicine and public health,* Colonels James H. Gordon and Charles H. Moseley and Lieutenant Colonels Philip B. Beckjord and Walter R. DeForest.

Also, *psychiatry,* Lieutenant Colonels Charles T. Brown, Raymond L. Hack, and Stephen Mourat; *ophthalmology,* Lieutenant Colonels Kenneth E. Hudson and John T. Martin and Major John E. Edwards; *otolaryngology,* Lieutenant Colonel Kenneth Somers; *general surgery,* Colonel Frank H. Van Wagoner and Lieutenant Colonels Paul V. Kiehl, Douglas Lindsey, Donald E. Reiner, and David E. Thomas; *orthopedic surgery,* Major Alfred O. Heldobler; *neurological surgery,* Major Edgar T. Pfeil, Jr.

Five previously certified Regular Army physicians have recently been certified in the following subspecialties:

Cardiovascular disease, Colonels Richard P. Johnson and Byron E. Pollock; *gastroenterology,* Lieutenant Colonels Benjamin H. Sullivan and Eddy D. Palmer; *pulmonary diseases,* Colonel Carl W. Tempel.

Group Photographs of Past Presidents

Group photographs of past presidents, as shown on pages 128 and 129 of the February, 1952, issue of the JOURNAL, are now procurable. State whether the first quarter century, 1901-1926, or the second quarter, 1927-1952, is desired. Address: Leuman M. Waugh, 931 Fifth Ave., New York 21, N. Y.

American Dental Association

Nearly one-third of the nation's dentists will be asked to cooperate in a nationwide survey of dental needs to be conducted during May by the American Dental Association.

Purpose of the survey, directed by the A. D. A. Bureau of Economic Research and Statistics, is to measure the extent and scope of the national dental problem, according to age, sex, size of community, and income of the patient. It will be similar to the survey conducted by the Association in 1940.

Questionnaires will be sent to 25,000 dentists throughout the country early in May. Each dentist receiving the questionnaire is urged to answer each question as completely as possible and to return the completed form as promptly as possible to the A. D. A. Bureau. A return envelope will be enclosed for each dentist's convenience.

The questionnaires will request information about the dental needs of ten consecutive patients. Included will be questions dealing with numbers of fillings, dentures, extractions, and other dental operations and treatment. All dentists who receive the questionnaire are urged to cooperate fully in providing the requested information.

In addition to serving as a measurement of whether dental needs are greater or less than they were in 1940 during the former survey, the new study will provide a basis for future years.

The study for the first time will include information about children and thus can provide a gauge for the future of such comparatively new preventive measures as fluoridation of public water supplies and topical applications of sodium fluoride as well as dental health education. By the end of 1951, more than 200 cities and towns were fluoridating their water supplies.

The compilation of factual data on dental needs will be particularly helpful in the development of sound and practical dental health programs. Such information will also serve effectively to counter the unsupported propaganda in favor of unworkable health schemes.

Individual dentists also may be interested in using the results of the survey to compare the dental needs of their patients with the average for the nation.

An appeal for the cooperation of all dentists who receive a questionnaire was made by Mr. B. Duane Moen, director of the Bureau of Economic Research and Statistics.

"The success of the survey depends on the cooperation of all dentists receiving questionnaires," he said. "Dentists will be making a significant contribution to knowledge of the dimension of national dental needs by filling out the questionnaires completely and carefully."

The names of the 25,000 dentists who will receive the questionnaires will be chosen in such a way as to provide a valid representation of the profession throughout the entire nation. Dentists will be selected in proportion to the total population of each community, thus assuring a thorough cross-section measurement of dental needs of the general public.

Notes of Interest

Leigh Cole Fairbank, D.D.S., announces the association of William James Conley, D.D.S., with him in the exclusive practice of orthodontics at 1726 Eye St., N. W., Washington 6, D. C.

Ralph W. Hodges, D.D.S., announces a change of address to 735 Farmington Ave., West Hartford, Conn., practice limited to orthodontics.

Dr. E. H. Mullinax announces the removal of his offices to 602 Thatcher Bldg., Pueblo, Colo., practice limited to orthodontics.

Lyman E. Wagers, D.M.D., announces the limiting of his practice to orthodontics at 846 East High St. (Ashland-Chevy Chase Shopping Center), Lexington, Ky.

G. Hewett Williams, D.D.S., M.S.D., announces the association of Robert L. Williams, B.S., D.D.S., M.S.D., in the exclusive practice of orthodontics at 4753 Broadway, Chicago, Ill.

OFFICERS OF ORTHODONTIC SOCIETIES

THE AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Bernard G. deVries - - - - - - - 705 Medical Arts Bldg., Minneapolis, Minn.
President-Elect, Brooks Bell - - - - - - - - 4150 Mockingbird Lane, Dallas, Texas
Vice-President, Malcolm R. Chipman - - - 1251 Medical Dental Bldg., Spokane, Wash.
Secretary-Treasurer, George R. Moore - - - - - 919 Oakland Ave., Ann Arbor, Mich.

Central Section of the American Association of Orthodontists

President, Paul G. Ludwick - - - - - - - - - - - - - Sharp Bldg., Lincoln, Neb.
Secretary-Treasurer, Frederick B. Lehman - - - - - Merchants National Bank Bldg., Cedar Rapids, Iowa

Great Lakes Society of Orthodontists

President, Holly Halderson - - - - - - - Medical Arts Bldg., Toronto, Ontario, Canada
Secretary-Treasurer, Carl R. Anderson - - - - 402 Loraine Bldg., Grand Rapids, Mich.

Middle Atlantic Society of Orthodontists

President, George M. Anderson - - - - - - - - - 831 Park Ave., Baltimore, Md.
Secretary-Treasurer, Gerard A. Devlin - - - - - - - - 49 Bleeker St., Newark, N. J.

Northeastern Society of Orthodontists

President, Paul Hoffman - - - - - - - - - 1835 Eye St., N.W., Washington, D. C.
Secretary-Treasurer, Oscar Jacobson - - - - - - - - 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, Reuben L. Blake - - - - - - - - - 240 Stockton St., San Francisco, Calif.
Secretary-Treasurer, Frederick T. West - - - - 760 Market St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Curtis E. Burson - - - - - - - - - 1232 Republic Bldg., Denver, Colo.
Vice-President, Kenneth R. Johnson - - 311 E. Pikes Peak Ave., Colorado Springs, Colo.
Secretary-Treasurer, Don V. Benkendorf - - - - 932 Metropolitan Bldg., Denver, Colo.

Southern Society of Orthodontists

President, Walter T. McFall - - - - - - - - - - Flatiron Bldg., Asheville, N. C.
Secretary-Treasurer, Frank P. Bowyer - - - - - Medical Arts Bldg., Knoxville, Tenn.

Southwestern Society of Orthodontists

President, Dan C. Peavy - - - - - - - - - 745 Milam Bldg., San Antonio, Texas
Secretary-Treasurer, Fred A. Boyd - - - - - 1502 North Third St., Abilene, Texas

American Board of Orthodontics

President, Stephen C. Hopkins - - - - - - - - 1746 K St., N. W., Washington, D. C.
Vice-President, Leuman Waugh - - - - - - - - - 931 Fifth Ave., New York, N. Y.
Secretary, C. Edward Martinek - - - - - - - - - 661 Fisher Bldg., Detroit, Mich.
Treasurer, Reuben E. Olson - - - - - - - - - 712 Bitting Bldg., Wichita, Kan.
Director, Raymond L. Webster - - - - - - - - 133 Waterman St., Providence, R. I.
Director, Ernest L. Johnson - - - - - - - - - 450 Sutter St., San Francisco, Calif.
Director, Lowrie J. Porter - - - - - - - - - 41 East 57th St., New York, N. Y.

National Home for Veterans' Orphans and Widows Helped By Annual Buddy Poppy Sale

A living memorial that exemplifies the highest type of service and the most lasting tribute to America's soldier dead, the V.F.W. National Home for war orphans and widows, to which a portion of the annual Buddy Poppy Sale proceeds is allocated, is one of the most unique institutions of its kind ever founded.

The outstanding principle of the 640 acre Home, located in the rolling farm land of Michigan, is to provide children with the atmosphere and environment typical of the average American home. The youngsters live in family-size groups, ranging from infants to high-school students, with a housemother in charge of each "cottage." No two cottages are exactly alike in building lines or furnishings, thus giving each dwelling an individuality of its own.

In some instances the housemothers are World War widows, mothers of children at the Home, or wives of totally disabled veterans. The "mothers" carry on their duties under the supervision of the Director of the Home, who keeps in constant touch with the progress and welfare of each family, and the "brother and sister" relationship develops rapidly in each group.

Each child of school age is enrolled in the local public schools, with tuition fees paid by the V.F.W. Every child has a savings account and is taught the value of thrift in actual practice, each child who goes to school being given a chance to earn his or her "spending money," a certain portion of which goes in the bank.

The Home is strictly nonsectarian. All children old enough to attend religious services, are given the opportunity of affiliating themselves with any of the various creeds represented with places of worship in the near-by community.

A MODERN DENTAL REFERENCE LIBRARY

PERIODONTIA—A Study of the Histology, Physiology, and Pathology of the Periodontium, and the Treatment of Its Diseases. By HENRY M. GOLDMAN, D.M.D., SECOND EDITION. 661 pages, 488 illustrations, 18 in color. PRICE, $12.50

BIOCHEMISTRY OF THE TEETH—By HENRY M. LEICESTER, Ph.D., 306 pages, illustrated. PRICE, $5.00

OUTLINE OF HISTOLOGY—By MARGARET M. HOSKINS, Ph.D., and GERRITT BEVELANDER, Ph.D., SECOND EDITION. 112 pages, illustrated. Size: 9x11-in. PRICE, $3.50

DENTAL CARIES—Mechanism and Present Control Technics as Evaluated at the University of Michigan Workshop. Edited by KENNETH A. EASLICK, A.M., D.D.S., 234 pages, illustrated. PRICE, $5.00

RESTORATIVE DENTISTRY—By JEROME M. SCHWEITZER, B.S., D.D.S., 511 pages, 1014 illustrations. PRICE, $15.00

ORAL REHABILITATION—By JEROME M. SCHWEITZER, D.D.S. 1161 pages, 1157 Illustrations. PRICE, $20.00.

BONE AND BONES—Fundamentals of Bone Biology. By JOSEPH P. WEINMANN, M.D., and HARRY SICHER, M.D., 464 pages, 289 illustrations. PRICE, $10.00

DENTAL PROSTHETIC LABORATORY MANUAL—By CARL O. BOUCHER, D.D.S., 410 pages. PRICE, $4.50

COMPLETE DENTURES—By MERRILL G. SWENSON, D.D.S., F.I.C.D., F.A.C.P., 726 pages, 882 illustrations, 10 in color. PRICE, $12.50

ORAL SURGERY—By KURT H. THOMA, D.M.D., IN TWO VOLUMES. 1521 pages, 1631 illustrations, 121 in color. PRICE, $30.00

ORAL PATHOLOGY—By KURT H. THOMA, D.M.D., THIRD EDITION. 1559 pages, 1660 illustrations, 78 in color. PRICE, $17.50.

ANESTHESIA IN DENTAL SURGERY—By STERLING V. MEAD, D.D.S., SECOND EDITION. 638 pages, 223 illustrations. PRICE, $12.50.

BASIC PRINCIPLES AND TECHNICS FOR COMPLETE DENTURE CONSTRUCTION—By VICTOR H. SEARS, D.D.S. 416 pages, illustrated. PRICE, $5.00

PHARMACOLOGY AND DENTAL THERAPEUTICS—By HERMANN PRINZ and U. GARFIELD RICKERT. Revised by EDWARD C. DOBBS, D.D.S., NINTH EDITION. 567 pages, 35 illustrations. PRICE, $7.50.

Theory and Practice of CROWN AND BRIDGE PROSTHESIS—By STANLEY D. TYLMAN, A.B., D.D.S., M.S., F.A.C.D., SECOND EDITION. 960 pages, 1273 illustrations, 9 in color. PRICE, $12.50

PRACTICAL ORTHODONTICS—(Original Text by the Late Martin Dewey) By GEORGE M. ANDERSON, D.D.S., SEVENTH EDITION. 556 pages, 640 illustrations. PRICE, $10.00

ORAL HISTOLOGY AND EMBRYOLOGY—Edited by BALINT ORBAN, M.D., D.D.S., SECOND EDITION, 350 pages, 265 illustrations, 4 in color. PRICE, $8.00

ORAL ANATOMY—By HARRY SICHER, M.D., 570 pages, 310 illustrations, 24 in color. PRICE, $15.00

DENTAL ANATOMY—By ROBERT C. ZEISZ, D.D.S., F.A.C.D., F.I.C.S., and JAMES NUKOLLS, D.D.S., F.A.C.D., 486 pages, 427 illustrations. Size: 8½x11-in. PRICE, $14.00

ADVANCED RADIODONTIC INTERPRETATION—By CLARENCE O. SIMPSON, M.D., D.D.S., F.I.C.D., 78 pages, 150 illustrations on 10 full page inserts. PRICE, $10.00

REVIEW OF DENTISTRY—Edited by JAMES T. GINN, B.S., D.D.S., 824 pages. PRICE, $5.75

DOCTOR AND PATIENT AND THE LAW—By LOUIS J. REGAN, M.D., LL.B., SECOND EDITION. 545 pages. PRICE, $10.00

An Introduction to the HISTORY OF DENTISTRY—By BERNHARD WOLF WEINBERGER, D.D.S., IN TWO VOLUMES. 1008 pages, 313 illustrations. PRICE, $20.00

ESSENTIALS OF ORAL SURGERY—By V. P. BLAIR, M.D., F.A.C.S., and ROBERT H. IVY, M.D., D.D.S., F.A.C.S. Collaboration of JAMES BARRETT BROWN, M.D., F.A.C.S., FOURTH EDITION. 635 pages, 485 illustrations. PRICE, $8.00.

DISEASES OF THE MOUTH—By STERLING V. MEAD, D.D.S., FIFTH EDITION. 1050 pages, 633 illustrations, 63 in color. PRICE, $12.50.

ORAL SURGERY—By STERLING V. MEAD, D.D.S., THIRD EDITION. 1448 pages, 805 illustrations, 16 color plates. PRICE, $15.00.

PHYSIOLOGICAL FOUNDATION OF DENTAL PRACTICE—By L. L. LANGLEY and E. CHERASKIN. 512 pages, 149 illustrations. PRICE, $8.25.

The C. V. Mosby Co., Publishers, St. Louis 3, Mo.

Baseball on crutches is real fun for Jack, who couldn't play such vigorous games with his friends until he received Easter Seal services, including a summer at a special camp for crippled children. Your Easter Seal contribution helps provide these health-building services for hundreds of boys and girls like Jack.

YOU CAN HELP—GIVE NOW

You can help crippled children walk, talk and live like other children by your contribution.

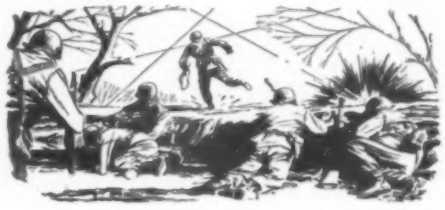
19th Annual Easter Seal Appeal

MARCH 13th to APRIL 13th

NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS, INC.
11 South La Salle Street, Chicago 3, Illinois
The Easter Seal Agency

Captain Raymond Harvey Medal of Honor

THE 17TH INFANTRY REGIMENT was attacking Hill 1232 near Taemi-Doug, Korea. Able and Baker Companies became split by a Red-held ridge. Charlie Company, Captain Harvey commanding, was moving up to fill the gap when the dug-in Red guns pinned it down. Calling for covering fire,



Captain Harvey advanced *alone* through a hail of enemy bullets. One by one, he personally wiped out four emplacements of machine guns and automatic weapons. Then he caught a bullet through the lung. But he stayed on, refusing evacuation, until sure the objective had been won.

"In Korea," says Captain Harvey, "we stopped aggression by *united* strength. *You* were helping—every time you bought a Defense Bond. Because your Defense Bonds were doing more than just helping keep you, and your family, and your country financially stable. They were backing *us* up in the field with *American production power*, the surest support any fighting man can have!

"I hope you'll go on buying Bonds—many, many of them. For your Bonds—and our bayonets—are making America strong. And in today's cold-warring world, *peace is only for the strong.*"

★ ★ ★

Remember that when you're buying bonds for national defense, you're also building a personal reserve of cash savings. Remember, too, that if you don't save *regularly*, you generally don't save at all. So sign up today in the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you bank. For your country's security, and your own, buy United States Defense Bonds now!

Peace is for the strong... Buy U. S. Defense Bonds now!

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

WILLIAMS, foremost in orthodontic materials

METALLURGICALLY *Correct*

to withstand the strain and stress of many attachments . . .

WILLIAMS *Arch Wire*

Too much consideration cannot be given the metallurgical properties of arch wire . . . the foundation of most orthodontic appliances. Resiliency, tensile strength, workability, resistance to discoloration, ease of soldering . . . these are factors upon which a serviceable appliance depends. Williams Arch Wires of special gold-platinum-indium meet these requisites. Thoroughly uniform in composition as a result of electric induction melting, these wires are supplied in their softest annealed condition. Available in two types: Round, 0.036 to 0.040 in. diameter; Rectangular (or ribbon), with 0.022x0.028 in. cross-section dimensions. Twelve-inch lengths, four grades.

• *Full details on the complete line of Williams Orthodontic Materials in illustrated catalog. Write for your free copy, including ordering chart.*

ALLOYED INDUCTIVELY • UNIFORMLY SUPERIOR

WILLIAMS GOLD REFINING CO., INC.

BUFFALO 14, N.Y. • FORT ERIE N., ONT. • HAVANA, CUBA

AMERICAN JOURNAL OF ORTHODONTICS

Published by THE C. V. MOSBY COMPANY, 3207 Washington Blvd.
St. Louis 3, U. S. A.

Entered at the Post Office at St. Louis, Mo., as Second-class Matter

Published Monthly. Subscriptions may begin at any time.

Official Publication of The American Association of Orthodontists,
its component societies and The American Board of Orthodontics

Editor-in-Chief

H. C. Pollock

Sectional Editors

Charles R. Baker, Evanston, Ill.
Henry Cossitt, Toledo, Ohio
Joseph D. Eby, New York City
Henry F. Hoffman, Denver, Colo.
James D. McCoy, Beverly Hills, Calif.
Oren A. Oliver, Nashville, Tenn.
William E. Flesher, Oklahoma City, Okla.

Associate Editors

Dentistry for Children
Walter T. McFall, Asheville, N. C.

Abstracts and Reviews
J. A. Salzmann, New York City

EDITORIAL COMMUNICATIONS

Original Communications.—Manuscripts for publication and correspondence relating to them should be sent to Dr. H. C. Pollock, 8015 Maryland Ave., St. Louis 5, Mo., U. S. A.

Manuscripts should be typewritten on one side of the paper only, with double spacing and liberal margins. References should be placed at the end of the article and should include, in the order given, name of author, title, journal, volume, pages, and year; e.g., Smith, E. J.: Children's Dentistry, Am. J. Orthodontics, 34: 1-25, 1947. Illustrations accompanying manuscripts should be numbered, provided with suitable legends, and marked on margin or back with author's name. Articles accepted for publication are subject to editorial revision. Neither the editors nor the publishers accept responsibility for the views and statements of authors as published in their "Original Communications."

Illustrations.—A reasonable number of half-tone illustrations will be reproduced free of cost to the author, but special arrangements must be made with the editor for color plates, elaborate tables, or extra illustrations. Copy for zinc cuts (such as pen drawings and charts) should be drawn and lettered only in India ink, or black typewriter ribbon (when the typewriter is used), as ordinary blue ink or colors will not reproduce. Only good photographic prints or drawings should be supplied for half-tone work.

Books for Review.—Only such books as are considered of interest and value to subscribers will be reviewed, and no published acknowledgment of books received will be made. These should be sent to Dr. J. A. Salzmann, 654 Madison Ave., New York City.

Reprints.—Reprints of articles published among "Original Communications" must be ordered specifically, in separate communication to the publishers, The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo., U. S. A., who will send their schedule of prices. Individual reprints of an article must be obtained through the author.

BUSINESS COMMUNICATIONS

Business Communications.—All communications in regard to advertising, subscriptions, change of address, etc., should be addressed to the publishers, The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo.

Subscription Rates.—Single copies, $1.10. In the United States and other countries of the U. S. Postal Zone $10.00 per year in advance. In Canada and other foreign countries $11.00, single copies $1.20.

Remittances.—Remittances for subscriptions should be made by check, draft, post-office or express money order, payable to the publishers, The C. V. Mosby Company.

Change of Address.—The publishers should be advised of change of subscriber's address about fifteen days before the date of issue, with both new and old addresses given.

Advertisements.—Only articles of known scientific value will be given space. Forms close first of month preceding date of issue. Advertising rates and page sizes on application.

Bound Volumes.—The Book Shop Bindery, 308 West Randolph Street, Chicago 6, Illinois, will be glad to quote prices for binding complete volumes in permanent buckram.

S·S·White PRECIOUS METAL WIRES for Arches and Springs

NO. 61 METALBA – Platinum Color

A high-grade, exceptionally strong, tough, springy wire. No. 61 Metalba is the highest grade orthodontic wire of our manufacture. It is high fusing, and maintains its high physical properties after soldering operations.

$3.90 per dwt.

GOLD PLATINUM – Gold Color

Gold Platinum Wire has been proving its merits for all types of arches and springs for more than a quarter century. It's easy working, strong, tough, springy, and doesn't "tire" or lose its elasticity while orthodontic treatments are in progress.

$3.00 per dwt.

NO. 12 CLASP

A high grade wire with physical properties that rival closely those of the highest priced orthodontic wires. It's almost as strong as the strongest, moreover, it is very tough and elastic, and an exceptional arch wire.

$2.80 per dwt.

S. S. WHITE METALBA BRAND BAND MATERIAL

A high-fusing, non-tarnishing all precious metal, medium hard band material, costing little more than base metal products. It's easy working, tough, and has good strength—sufficient for all orthodontic purposes. Metalba Band Material requires no particular heat treatment. It is high fusing and gold solder of any fineness may be used with it.

$2.40 per dwt.

ALL MADE IN POPULAR GAGES AND WIDTHS

Prices subject to change

THE S. S. WHITE DENTAL, MFG. CO., 211 S. 12th STREET, PHILADELPHIA 5, PA.